The New England
Journal of Medicine

VOLUME 213 DECEMBER 5, 1935 NUMBER 23

CANCER OF THE LARYNX*

A Study of Two Hundred and Two Cases With End Results

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INTRODUCTION

THIS report is based on a study of 202 unselected and consecutive cases of cancer of the larynx treated at the Collis P. Huntington Memorial Hospital over a period of fourteen years, dating from January, 1919 to July, 1933. During this period there were 12,466 cancer patients admitted, 202 of whom suffered from cancer of the larynx, giving an incidence of 1.6 per cent for cancer of this organ.

Unfortunately, in a large majority of these patients the disease had progressed to such an extent that any expectation of a cure was out of the question and the most one could hope for was palliative relief. The unwarranted hopeless attitude assumed among some in the profession, and the failure to recognize the early symptoms of cancer may in great part account for the late arrival of patients for treatment. Early diagnosis offers a patient his best chance of cure. This is especially true, as will be shown later, in the early intrinsic type.

Historical—The modern study of cancer of the larynx is closely associated with the development of laryngology as a distinct specialty in medicine. This dates from the discovery of the laryngoscope by Garcia in 1855 and its introduction into medicine by Türck (1857) and Cermak in 1858.

We are greatly indebted to Sendziak for his contribution to our knowledge of the history of malignant tumors of the larynx. Although the disease was known to the ancients, it was imperfectly understood by them and their observations are only of academic and historical interest. Aritaeus (about 100 A.D.) refers to cancer of the larynx. Galen (about 200 A.D.) gives a description of malignant ulceration exhibiting an infiltrating character and also, of new growth of the pharynx and the base of the tongue, leading to mechanical dyspnea by compression of the upper part of the airway. During the Middle Ages very little, if anything, was recorded in the literature on the subject.

In 1668 Boerhaave of Leyden described a cancerous angina and Morgagni of Padua (1732) gave a clear description of cancer of the larynx in two cases. These patients succumbed to dyspnea and dysphagia and necropsy showed malignant disease of the pharynx and larynx. During the ensuing century, no contributions of note appear to have been made on this subject.

In 1833 Albers of Bonn reported a case in a man aged fifty-four who died of asphyxia caused by a malignant tumor the size of a nut. In the same year Brauer of Louvain devised a thyrotomy operation for laryngeal polypi and this procedure was later (1884) adapted by Ehrmann for the treatment of cancer.

In 1836 Bellocq and Trousseau wrote upon "laryngophthisis carcinomatose". Their work shows that granulomas and neoplasms were still not clearly distinguished. In 1846 Trousseau is said to have performed the first tracheotomy for the relief of laryngeal carcinoma. Before the discovery of the laryngoscope (1855) cancer of the larynx was considered a rare disease.

In 1851 Dr. Gurdon Buck of New York first performed a thyrotomy for the removal of laryngeal cancer.

In 1855 the discovery of the laryngoscope by Garcia, mentioned above, laid the foundation for a more accurate study of cancer of this organ. It is of interest to note that Garcia was not a physician, but a singing teacher in London and invented the laryngoscope in order to observe the vocal chords.

The first total laryngectomy was performed by Patrick Heron Watson (1868) of Edinburgh. The patient survived but a short time. Billroth of Vienna (1873), after experimenting on dogs successfully, removed the larynx of a man who survived several months; in 1874, Heine and Mars repeated the operation. In the same year Gussenbauer also operated and devised an artificial larynx, the first of its kind.

In 1877, Foulis, D. of Edinburgh, reported his first case (*Lancet* 2:531 [Oct. 13] 1877) and in 1881 published a paper in which he had collected reports of thirty-two complete and six partial laryngectomies. The results of these cases were bad; the method was unanimously and severely criticized. (*Trans. Internat. Med. Congress* 3:251, 1881.)

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The first laryngectomy in this country was performed in 1879 by Dr. Frederick Lange, a surgeon residing in New York.

In 1883, Dr. J. Solis-Cohen, of Philadelphia, collected sixty-five cases, all of the reports and statistics available and published the results of the operation to date. (*Trans. College of Physicians* 6:353 [Apr. 4] 1883.) Fifty per cent of the patients died from the operation. The initial shock was severe; the operation had cost the sacrifice of a certain number of lives, and the conditions of the survivors had often been described as pitiable in the extreme. In the opinion of Solis-Cohen, "laryngectomy had not tended to the prolongation of life; and the prolonged existence of a very few cases seemed purchasable only at the sacrifice of the remnant of existence of many others". It was because of the unsuccessful efforts that the operation was abandoned for a brief period in this country.

About the same time, Gluck of Berlin, adopting the best ideas of his predecessors, had put them in practice and added his own. He suggested the operation in two stages in order to overcome the hitherto dangerous reactions. In the first operation he severed the trachea from the larynx and sutured it to the skin, two weeks later removing the larynx. Later, he performed the operation in one stage, as we know it today.

In 1892, following the improved method of Gluck, Solis-Cohen removed the larynx of a patient and, for the first time in this country, attached the severed end of the trachea to the skin. The whole procedure, including the anesthetization and dressing, occupied one hour. Indeed, a very creditable showing, even in this day. The subsequent care given the patient personally by Dr. Cohen and his assistants is deserving of great praise.

In 1895, this patient, Daniel Hickey, was exhibited at the annual meeting of the British Medical Association in London. He was in perfect health, entirely comfortable, breathing freely through a tracheal opening in the neck without a tube, and the first in this country to have acquired a pharyngeal voice, plainly audible at a considerable distance.

The next decade was to witness what is, perhaps, up to the present day the greatest advent in the surgical treatment of laryngeal cancer. With a clearer understanding of the surgical indications, improvement in technique and better postoperative care, the results of operation, both in this country and abroad, showed a most striking improvement.

Topia of Madrid reports 106 laryngectomies with no fatalities, but unfortunately in these there were thirty-two recurrences. F. O. Lewis, Tucker, Mackenty and others in the country were able to make a comparable showing. The latter in 130 laryngeal operations as follows: twenty-two thyrotomy, six hemilaryngectomy and 102 total laryngectomy with no operative mortality following thyrotomy or hemilaryngectomy. Two died, one from septic bronchial pneumonia, and the others from general sepsis; both had diabetes.

F. O. Lewis reports that out of 156 operations, forty-nine patients are alive and well over five years; seventeen extrinsic, thirty-two intrinsic.

Thomson, St. C. has obtained seventy-six per cent of lasting cures in intrinsic cancer and in his opinion, when operated on early, following his procedure, results can be secured which cannot be surpassed in the treatment of cancer in any other internal region of the body.

The credit is due largely to the zeal and untiring efforts of such men as Gluck, Soerensen, Schmiegelow, Moure, Topia, Semon, Thomson and others in Europe. In our own country, the early efforts of Solis-Cohen and Mackenzie of Baltimore deserve high praise. In more recent times, the contributions of Jackson, Fielding Lewis, H. B. Orton, J. E. Mackenty and many others have placed laryngeal surgery on par with surgery in any other part of the body.

OTHER METHODS

Radium—The early use of radium in laryngeal cancer not only produced indifferent results but in many cases, increased the sufferings of the already miserable patient. Until about 1910, the belief was prevalent that "radium did no good"; (Sir W. Douglas Harmer) "that radium killed more people than it relieved". Because of these opinions, the early workers in the field of radiotherapy met with scant encouragement.

In the past decade a considerable amount of work has been done in radiotherapy throughout the world, so much so that the early opposition to radiotherapy has been replaced by enthusiastic acceptance of radium as a valuable therapeutic agent. Professor Forssell (1931) at the third International Congress of Radiology stated that in the history of cancer surgical treatment was the achievement of the last century, and the formation of radiotherapeutic centers can be considered as the great contribution of our generation to the social struggle against cancer.

Dominici and later Finzi were the earlier pioneers of radiotherapy in England and were the first to suggest interstitial radiation.

Strangeways (1920-1922) studied the effects of radiation on living cells and made observations on the character and behavior of normal tissue cultures preparatory to a study of the effects of x-rays on cells growing in vitro.

Canti and Donaldson (1923) investigated the histological changes produced by radium in cases

of carcinoma of the cervix uteri. After radiation, sections were taken at frequent intervals and studied microscopically, the results confirming the earlier findings of Lacassagne and Monod (1922) that immediately after irradiation there was no longer any mitosis present. It was found, however, that mitosis returned on the second day, but that it was strikingly abnormal. Thus, it was realized that further knowledge of the biological action of radium was essential in treatment of cancer if success is to be attained. Later considerable experimental work was carried out jointly by these same investigators (Strangeways, Canti and Donaldson) which produced valuable information regarding the biological action of both radium and x-rays on tissue cultures.

Both in this country and abroad, there are a number of radium centers or institutions admirably suited for carrying out radiotherapy. In England until 1932, there were nineteen such centers, all supervised by competent men. Sir W. Douglas Harmer (London) is perhaps the best known for his work in radiotherapy in the field of laryngology. In Paris, the Radium Institute is in charge of Regaud. In Stockholm, the Radium Hemmet under Forssell and Berven have published good results with the use of radium; likewise, the Institute of Brussels organized by Bayet and Murdock. In this country, the Memorial Hospital in New York, Michael Reese Hospital in Chicago and our own hospital, the Collis P. Huntington, are institutions similar to those abroad.

Harmer states that, with cancers strictly localized to the vocal cords (early cases), he has had a high percentage of good results. Recurrences have occurred only at the anterior commissure or below the cord. In advanced cases with fixed vocal cords and subglottic extensions, the results have been bad. He believes this is due to faulty technique, namely, failure to cover the growth and thereby failure uniformly to radiate all parts of the tumor. He suggests the fenestration of the thyroid cartilage (Ledoux's method) and introduction of platinum needles containing radium. In his opinion, small doses over a long period of time produced better results than large doses for a short time. Platinum needles of 0.6 or 0.8 mm. even 1 mm. in thickness are used. He also favors the use of x-ray first if the disease is extensive, 1/3 of the erythema dose over a period of a week, followed immediately by insertion of radium.

Cutler, following the biological radium experimentation of Strangeways, Canti, Spear and their coworkers, believes that the hitherto considered radioresistant squamous-cell carcinoma can be successfully treated by protracting the time during which radiation is administered, essentially applying the principles used in x-ray therapy by Coutard.

Roentgen Therapy

By far the best results obtained with radiotherapy are reported by Coutard. He has modified his former technique so that the reactions he previously obtained are not so severe and the accidents which occurred in the earlier periods have been appreciably reduced. The result of treatment by his method in seventy-seven cases of cancer of the larynx is here cited.

Cases Treated from 1920 to 1926	Survival	
	After Five Years	After Seven Years
77	22 (28%)	21 (27%)

He believes that Roentgen therapy of cancer of the larynx is relatively easy and yields good results in early cases before there is invasion of the cartilages and when the growth has only slightly immobilized the muscles. The cutaneous dose necessary for the healing of these cancers is comparatively small, on an average a total of 6000 r. (on the skin) with fields of 50 sq. cm. delivered in a period of fifteen to twenty days. Roentgen treatment of radioresistant cancers of the larynx, which have immobilized the hemi-larynx, infiltrated the muscles and invaded the cartilage, is generally difficult. In spite of heavy doses, these cases are rarely cured and untoward complications may occur. Doses of 7000 to 8000 r., or more, are required and constitute the maximum tolerated by the tissues.

In order to avoid osteochondro-necrosis following roentgen therapy, he practices resection of the thyroid and cricoid cartilage on the side of the lesion, especially when they are frankly ossified. He further believes that this operation is indispensable when the growth has invaded the cartilages, is deeply infected and only slightly radiosensitive. Previously, resection of the angle of the mandible was practiced for the same purpose, but this has now been abandoned as the Roentgen treatment has been modified to avoid osteoradionecrosis.

Three principal types of epithelial radioreaction are described by Coutard as guides during the x-ray therapy and are as follows: (1) The cutaneous "radioepidermitis of Regaud and Nogier (1913) (2) the "radioepithelitis" of Coutard and (3) the "radioepithelitis" of the columnar epithelial cells. Radioepithelitis of the stratified cells generally appears about the thirteenth to fourteenth day after the beginning of irradiation. This is the earliest epithelial radioreaction of this region. Lower in the larynx, at the level of the vocal cords where the stratified epithelium resembles that of the skin, radioepithelitis appears at about the twenty-seventh or twenty-eighth day, at the same time as the cutaneous radioepidermitis. At the level of the ventricular bands and below the

glottis on the mucosa covering the tracheal rings, the epithelium is cylindrical or columnar; the reaction in this region appears at the thirty-ninth or fortieth day.

If irradiation is more intense, the reactions appear earlier, on the tenth and the twenty-fourth day respectively for the first two; sometimes the third reaction appears a very few days after the second.

Since it has been learned that radioresistance of cancers is the result of excessive daily doses with too high intensity rather than the irradiation having been spread over too long a time, the duration of treatment was prolonged.

From 1927 to 1933 Coutard and his collaborator, F. Baclesse, extended the duration of treatment of certain neoplasms from thirty to ninety days by means of weak daily doses (in the order 175, 250 r. per day) distributed in two seances without varying the other factors particularly the size of the fields. In this way, they were able to bring about disappearance of growths which up to then were considered radioresistant.

In conclusion, we may summarize Coutard's results as follow:

(1) Cure of cancer by x-rays is still difficult.

(2) Cure of cancer by x-rays is still dangerous.

(3) A very small margin exists between the dose which will determine a cure and the dose which will provoke an injury.

(4) The daily examination of the patients is necessary; modification of normal tissues and of the general condition by x-ray treatment sometimes appears so quickly that it is often necessary to diminish the daily dose or the size of the fields in the course of treatment.

He further concludes that there exists no fixed method of treatment, but a simple clinical treatment for each individual patient and for the special type of tumor.

At the present time, there is a lack of agreement as to what is the best method of treatment for cancer of the larynx, because not only the size and location, but the grade of tumor must be considered. Laryngologists with extensive experience in this field of surgery still prefer surgical removal with or without postradiation. If it can be shown that radium or x-rays alone or combined can produce as high a percentage of permanent cures as surgery, it will be a safer method of treatment and will be welcomed by the surgeon and be a blessing to the patient.

Etiology—The origin of cancer is still unknown. However, experimental research, notably the work of Rous, Borrel, Murphy, Gye and Bernard, has thrown light on the question of whether there is an external agent concerned in its production. Sir Charles A. Ballance in an address to the American College of Surgeons at Boston, October 11, 1928, speaking on the nature of cancer, summarized our present state of knowledge in the following words: "The efficient cause lies beyond the irritation or injury which are but the partial causes of the disease. The injury prepares a nutrient soil favorable for the growth of the effective agent of malignant disease."

Predisposing Causes—Overuse of the voice, heredity, irritant inhalations, excessive use of tobacco and alcohol have been cited as etiological factors.

Use of Tobacco—In the present series of cases, there were ninety-one patients who smoked, forty-one smoked and chewed, four chewed only, six stated they did not use tobacco in any form and in fifty-eight, this fact is not recorded. The ratio of incidence of cancer of the larynx in tobacco users and nonusers of tobacco is such that we cannot draw definite conclusions on this as an etiological factor. Repeated injury and long-continued irritation and inflammation are potential factors of cancer. We recognize leukoplakia as a definite precancerous lesion. There is a pathological slide in my possession showing the transition from leukoplakia to carcinoma.

Vocal Abuse—This is frequently cited but is difficult of proof, because of the incompleteness of the records. Most laryngologists are familiar with the patient who by overuse or incorrect use of the larynx, especially singing in the open air beyond one's tonal reach, presents himself with the history of having suddenly lost his voice. Upon examination one finds red-streaked vocal cords: hemorrhage of the cord from abuse. The practice persisted in may lead to hypertrophic laryngitis. Jackson states that out of 582 cases of proved cancer of the larynx in his experience there had been undoubted vocal abuse in 376 (64.6 per cent). Of the 376, approximately one half 187 (49 per cent) were professional or vocational voice users. These included not only speakers, teachers, singers, hucksters, streethawkers, salespersons, foremen, drill-masters, etc., but also mechanics and factory employees required to talk loudly in noisy, dusty places, and persons employed in many other vocations ordinarily little suspected of requiring excessive use of the voice. The balance 189 (50.2 per cent) used their voices for continuous conversation.

When talking every person is for a time mouth-breathing and mouth-breathing is a well-recognized cause of chronic laryngitis. The assertion by certain authorities that although vocal abuse cannot be said to be the cause of cancer it is, nevertheless, one of the commonest causes of chronic laryngitis, keratoses, papillomata and granulomata: and that these conditions when perpetuated by vocal abuse and other causes can be suitable soil for the development of cancer. The common observation of vocal abuse is probably best demonstrated by the

hematoma of the vocal cord resulting from improper use of the voice, and the therapeutic effect of absolute silence in certain forms of laryngitis.

Malignant Transformation—In this series there were a number of patients in whom cancer developed in an original benign neoplasm. There were eleven cases of papilloma which later developed carcinoma, in seven of which the transition was proved by biopsy; two had laryngeal polyp with subsequent malignant degeneration; one developed carcinoma in a scar following an operation for branchial cleft. Alfred Denk reports a case of carcinoma developing in scar tissue following an attempted suicide twenty years earlier. There was a marked infiltration of the interior of the larynx which required a tracheotomy and later a laryngectomy was performed. In four patients of this series (Nos. 20, 47, 70 and 160) there is clinical evidence that the disease was probably the result of extension of branchial cleft carcinoma to the larynx. Crile and Kearns report a direct extension of a branchial carcinoma to the pyriform sinus of the larynx proved by necropsy. There was one case (151) of thyroglossal duct cancer with extension of the larynx.

Semon, in a collective study of 10,747 cases of benign tumors of the larynx, found a malignant transformation in forty-five cases. Of 2531 benign growths of the larynx in which no operation was performed, malignant degeneration occurred in twelve, whereas in 8216 intralaryngeal operated cases it occurred thirty-three times. The inference to be drawn from this study is that intralaryngeal operations on benign tumors do not influence the development of malignancy. Hinsberg cites a case of transformation of benign tumor of the larynx into a malignant growth. This was the case of a man of seventy-three who had a "walnut" sized tumor removed which upon histologic examination was benign. The patient remained well for some time (sixteen months) when another specimen removed from the original site showed carcinoma.

The transformation of a benign, papillomatous growth into a malignant process is explained by Ewing in four possible ways:

1. The original disease is a simple papilloma which really changes its clinical character and develops infiltrative growth.
2. The original disease is carcinoma, but the examination is from tissues which are inadequate as specimens.
3. An original papilloma is removed, but the disease occurs elsewhere as a carcinoma.
4. An original papilloma is imperfectly removed and the remnant is stimulated to a typical cancerous growth.

TABLE 1

INCIDENCE OF LARYNGEAL CANCERS BY YEARS

Year	Male	Female	Combined
1919	15	1	16
1920	8	2	10
1921	16	1	17
1922	21	2	23
1923	26	0	26
1924	13	0	13
1925	6	3	9
1926	6	0	6
1927	6	2	8
1928	10	0	10
1929	7	1	8
1930	10	2	12
1931	15	2	17
1932	14	1	15
1933	9	3	12
	182	20	202

Age—Age is an important factor in the incidence of the disease as shown by the following table:

TABLE 2

AGES AND SEX

Age of Onset by Decades

Ages Years	Males	Females
20-30	0	1
31-40	9	0
41-50	34	4
51-60	72	3
61-70	47	8
71-80	15	4
81-90	2	0
Age not stated	3	0
	182	20

The greatest number occurred between fifty and sixty, seventy-one or 34.6 per cent. The next in frequency is between sixty and seventy, with fifty-six or 26.8 per cent. The two oldest cases in our series were eighty-two and eighty-six respectively, both males. Our youngest case was a woman (20354) of twenty years of age of proved cancer, case No. 24. The oldest female was seventy-five (163). The youngest male was thirty-four, the oldest was eighty-six. In studying the age table, one must bear in mind that there are fewer people living past the age of sixty and there is, therefore, a drop in the incidence of cancer after this period.

Sex—There were 182 males and twenty females.

The table shows that the condition is not very rare between thirty and forty, and is less frequent in the aged. McBride records the case of a girl, aged twenty-four, with postcricoid involvement. Lilly reports a similar case in a young woman, aged twenty-two. F. H. Figi and Gordon New report a case of intrinsic cancer in a youth of fifteen and in a woman of twenty-four. Garil treated a girl of eighteen for cancer of the larynx and Chiari had a case

of epithelioma of the vocal cord in a girl of sixteen. Our figures agree with those of other clinics which show the greatest number of cases in the fifth decade of life.

Nationality—It is of interest to note that all the laryngeal carcinomas were in white people, there being no Negroes or Chinese among them. That may be because there are very few Negroes or Chinese that come to our clinic for any condition. Practically one half of ninety-nine cases were in American white, there being twenty-five Canadian French and the remainder Europeans.

Occupations—The occupations of the patients cited in our series comprised all industries and professions.

SIGNS AND SYMPTOMS

Duration—In forty-five cases the duration of the symptoms before the first visit was less than six months; in forty-six cases from six months to one year; in thirty-four cases, one to two years elapsed before the first visit; in sixteen, two to three years; in five cases, three to four years, in three cases, four to five years. In one case, the duration was six or seven years. This was in a male sixty-five years of age with a growth on the right vocal cord which began as a papilloma and later became malignant by transformation. The shortest duration was that of a man sixty-five who complained of a sore throat for one month before admission. The longest duration was in a man fifty-seven years of age who was hoarse ten years.

TABLE 3

DURATION OF SYMPTOMS BEFORE ADMISSION

Less than 6 months	45
6 " to 1 year	47
1-2 years	34
2-3 "	16
3-4 "	5
4-5 "	3
6-7 "	1
10 "	1
Not stated	50
	202

Where there is a history of three years' duration or more before admission to the hospital a number of explanations are possible. A lesion starting on the cord, particularly at its anterior edge, may remain more or less dormant for a long time before invading the surrounding structures. This may be explained by a very meagre lymphatic supply; by the anatomico-histological structure of that part of the larynx; low grade malignancy; and long presence of a papillomatous growth undergoing transformation. Frequent instances of this have been shown by Jackson, Thomson, Semon and others.

Symptoms—The symptoms will vary with the site of the lesion and will depend largely upon how much the normal function of the larynx is impaired. A growth situated on the edge of the cord near the anterior commissure will cause more hoarseness, because it prevents complete closure of the glottis, than a larger growth on the cord in the region of the posterior commissure where the closure of the glottis is not so much affected. There may, therefore, in early stages be no symptoms or mere fatigue of voice or transitory hoarseness. As the growth progresses and invades the glottis the hoarseness becomes more pronounced. This may go on for months or even years, as some of our cases have, and the patient or perhaps his medical attendant, regards it as "cold". With the advance of time the voice becomes altered, and the breathing is impaired, especially on exertion, and the voice may be reduced to a coarse whisper, finally leading to aphonia.

The mild symptoms very often complained of by the patient bear a disproportionate relationship to the size of the lesion and the seriousness of the condition. A man aged sixty-seven (case No. 8) complained of a tickling sensation in the throat with no other discomfort. Examination showed an extensive lesion involving the arytenoids and postcricoid regions. The patient died a month after his first visit to the hospital. With the exception of urgent dyspnea, in advanced cases of intrinsic carcinoma, and dysphagia in the extensive extrinsic cases where there is involvement of the esophagus, the symptoms are not very alarming, nor is pain very severe. This is especially so in the early stages. Many patients are able to continue their usual occupations and some have even been accepted as good risks for life insurance, the examining physician not being aware that cancer is present.

Only the patients' chief complaint is recorded in this study. Generally speaking, the intrinsic type is characterized by a varying degree of hoarseness in the early stages. As time progresses, the hoarseness is increased and normal respiration is interfered with, often leading to aphonia and dyspnea. Pain is usually not a factor in this type of lesion.

In the extrinsic type, the symptoms vary greatly with the site of the lesion and its extent. There is at first some vague discomfort in the throat such as feeling a lump or perhaps some slight difficulty in swallowing. As time goes on, these symptoms increase in severity. Pain is at times quite common in this type and is very often referred to the ear.

SYMPTOMS

Enlargement of the Cervical Glands as the First Symptom

In twenty-two patients, the sole complaint was a swollen neck with no other discomfort.

Hoarseness was a predominant complaint in 100 cases, in forty-seven patients, the chief complaint was sore throat of varying degree. Dysphagia was present in nineteen cases. Swollen neck or enlarged cervical glands with no other complaint was recorded in twenty-two instances. Loss of voice was the only discomfort complained of in four cases. Two complained of feeling a lump in the throat. One had a tickling sensation in the throat. Four had dyspnea. Thus, it may be seen that the symptoms depend largely on the location of the tumor and the extent it interferes with normal function. Generally speaking, in the middle-aged and elderly people, any kind of abnormal sensation persistently felt in some part of the throat should be regarded seriously.

TABLE 4

CHIEF COMPLAINTS

	Male	Female
Hoarseness	94	6
Sore throat	44	3
Swollen neck	20	2
Dysphagia	11	8
Dyspnea	4	0
Loss of voice	3	1
Lump in throat	2	0
Tickling sensation in throat	1	0
Not stated	3	0
	182	20

Site of the Lesion—As recently as 1880, Stoerk, professor of laryngology in Vienna, remarked that carcinoma is rarely found limited to the larynx, but most frequently arises in the mucous folds between the epiglottis and the tongue, or between the epiglottis and the esophagus and then spreads to the larynx. Our present conception is that it is primary in the larynx and may extend by contiguity from the pharynx to involve the larynx, the so-called laryngopharynx type of extrinsic cancer. Among the male patients, eighty-one were of the intrinsic type and eighty-seven were extrinsic. In nineteen males the site was not stated. In the females, fourteen were of the extrinsic variety, five intrinsic and in one case the exact location is not stated. The location of the lesion as found upon admission to the hospital is shown in the following table. In a number of instances the exact site of the lesion is not stated in the record.

TABLE 5

INTRINSIC

	Male	Female	
Vocal band (2 L. & 3 Rt.)	5	1	
" cords, bilateral	11	2	
" " rt. with subglottic ext.	23	0	— 63 cords
" " left, with inv. of band	13	0	
Cords, site not stated	7	1	
Ventricles	2	1	
Ventricle, rt.	1	0	
Subglottic	9	0	
Interior of larynx	5	0	
	76	5	— 81 Intrinsic
Epiglottis	25	2	
Arytenoids	10	1	
Rt. Arytenoid	5	1	
Left "	4	0	
sinus, right	3	0	
" left	3	0	
" side	3	2	
Ary. epigl. fold, left	3	0	
" " " side	16	0	
Postcricoid	7	7	
Right side of larynx	3	0	
Left " " "	3	0	
Pharynx	2	1	
Total Extrinsic	87	14	
Site not stated	19	1	
	182	20	

The above table shows that the site of original lesion is extremely variable, although certain parts of the larynx are particularly vulnerable to the disease. Out of seventy-six intrinsic cases the cords were the site in sixty-three patients. The postcricoid type is especially noticeable in the female patients.

Contrary to the statistical reports published by many laryngologists our records show a predominance of the extrinsic type over the intrinsic, as shown in table 5. This may be explained by the fact that most of the intrinsic operable type were treated at other surgical hospitals and the more advanced extrinsic or mixed type were referred to us. Another explanation is that probably a great number of the extrinsic group began as intrinsic and by extension became extrinsic or a mixed type.

Cords—It is of interest to note the frequency of cordal cancer in the intrinsic type. Out of a total of eighty-one intrinsic cases, the cords were involved in sixty-three instances. Schmiegelow noted the greater frequency of cordal involvement in intralaryngeal cancer, his series showing thirty-six instances in forty-eight cases. In the females, of the five intrinsic cases, four involved the cords: the ventricles were involved once, and the site of the lesion was above the cords once.

Subglottic Type—Comparatively speaking this site is less frequently encountered, being present in nine cases. In two patients there was subglottic extension from the lesion on the right cord. In one instance there was involvement of the ventrical band from extension of the neoplasm on the left cord. In cases where the cord

is the site of the neoplasm with simultaneous subglottic involvement it is difficult to be certain of the origin of the tumor. It was pointed out by Butlin (quoted by St. C. Thomson), that in a subglottic type of lesion if the motility of the cord is impaired, although no growth is seen on the cord, it is nevertheless involved and a fissure operation does not cure the patient. This has been our observation in several instances. This type of lesion was not encountered in our female patients.

FIG. I. Picture of larynx (Chaney). This shows a typical subglottic type tumor, Case No. 178, described in detail below.

CASE 178 (Admitted March 28, 1932)

Male, aged fifty-six. Hoarseness of one and one-half years' duration.

Examination: Ulcerated mass on the left side of the larynx situated subglottically. Fixation of the left cord. There is marked induration of the entire left half of the larynx and beginning edema of the arytenoid on that side. The right half of the larynx shows some edema with questionable edema of the right ventricle. Breathing space fairly ample. Glands in the neck not felt.

Diagnosis: Intrinsic carcinoma of the subglottic type. Pathologist reports Epidermoid Cancer Gr. II.

March 30, 1932—Laryngectomy: One-stage resection of larynx from below upward. The patient made an uneventful recovery. Two weeks later a suspicious, small area on the left side was discovered. Biopsy showed malignancy. The lesion was at the level of the fourth tracheal ring and four gold seeds 1.1 mc. were inserted. The patient died September 15, 1932 from metastases and secondary infection.

This illustrates a typical case of subglottic cancer. The one and one-half years' duration before the patient presented himself for treatment gave ample time for metastases so that at the time of operation metastases was already present, but could not be seen or felt. The prognosis in the type (subglottic) is not very favorable especially if more than six months have elapsed since the onset of the lesion. In this type of cancer there is early invasion in the deep nodes about the larynx and trachea. The subcricoid and peritracheal, as well as the inaccessible posterior groups along the recurrent nerves and those nodes behind the esophagus are also frequently involved. The metastases may be present but cannot be seen or felt. This was particularly so in this case as the subsequent clinical course of this patient showed.

Extrinsic Form—The epiglottis was involved in twenty-five cases in males; two in females. It is a striking observation to note the relative infrequency of the postcricoid type of lesion in the male as compared with the female. Out of a total eighty-seven extrinsic cases in the male only seven were recorded as postcricoid, whereas out of fourteen extrinsic cases in females seven or fifty per cent of the lesion was postcricoid. Involvement of the esophagus was present in this three times in the females, twice in the males. Both arytenoids were noted as the site of the lesion in ten patients, on the right alone five, on the left alone four, in males. In females, both arytenoids were involved also and once the right alone. In males, the pyriform sinus was involved nine times; three on the right, three on the left and in three, side was not stated. In the females, it was noted in two patients. The pharynx was the site of the lesion twice in males and once in females.

Diagnosis—It is not always possible to make an early diagnosis and the following are some of the reasons for this:

1. The remote location of the tumor.
2. The symptoms may be slight, especially in the early stages of the intrinsic type.
3. Rapidity of the growth which may be very marked in some instances.
4. Early necrosis and metastases, especially in the extrinsic variety.
5. Early and rapid invasion of surrounding cartilages.

The early diagnosis of cancer of the larynx, especially in the intrinsic type, is of the greatest importance. Contrary to the opinion held by many physicians, the prognosis in this type is good when diagnosed early and treated promptly. Unfortunately our records show that patients do not present themselves for treatment until the disease has become so extensive that operation is out of the question, and the best that can be expected is palliative relief. There are several explanations for the late appearance of the patient, especially the hospital type case: (1) The symptoms at the onset such as slight hoarseness or mild discomfort are not taken seriously by the patient. (2) The apparent well-being of the patient in spite of a very serious condition in the larynx.

In the early stages the diagnosis is not always easy, and mistakes have been made by very competent laryngologists. The first laryngectomy performed by Billroth (1873) for cancer

presumably of the larynx upon examination proved to be a tubercular larynx. Semon[31] states, "Out of thirty-three patients on whom thyrotomy was performed presumably for intrinsic malignant growths, in eight the diagnosis was either found to have been at fault or remained doubtful."

We endeavor to do a biopsy in every case except in those patients in whom the disease has progressed to such an extent that the physical condition contraindicates even this minor procedure.

Differential Diagnosis—In the differential diagnosis of laryngeal cancer, one must consider chronic laryngitis, syphilis, tuberculosis, pachydermia, perichondritis, angiomas, laryngeal polyps and benign growths. Of course, in the advanced cases, diagnosis is not so difficult, but even here one must constantly keep the other two members of the triad, syphilis and tuberculosis, in mind.

Tuberculosis—The tubercle shows a predilection for the posterior part of the larynx especially the posterior interarytenoid commissure and depending upon the stage of the disease, there may be either infiltration, proliferation or ulceration. Primarily, tuberculosis is an ulcerative process and does not have the same tendency to proliferate as cancer. Tuberculosis is usually ingrafted upon an anemic base and the rest of the larynx may show evidence of anemia. At any rate, this is a most common mistake that one is likely to make. It is more probable to mistake tuberculosis for cancer than vice versa. Also, it is practically always secondary to pulmonary tuberculosis. An examination of the chest will help to rule this out. One must always bear in mind that tuberculosis and carcinoma may coexist in the same larynx.

Syphilis—Syphilis is usually more widely disseminated in the larynx. The larynx is markedly congested. In counterdistinction to tuberculosis, there is an absence of pallor. Usually there is early fixation of the cords, and it occasionally leads to dyspnea. The diagnosis is greatly aided by the history of infection and serological examination.

Fixation—Especially in the intrinsic type of cancer, early fixation of the cord on the affected side denotes a considerable progression of the lesion. This is particularly so in the subglottic type, and this fixation must be differentiated from a fixation that may be caused by an arthritis of the crico-arytenoid articulation. A slight limitation of movement is highly significant. This particularly brings to mind a recent case of a patient who had a fixation of a cord which was pronounced to be an arthritis of the crico-arytenoid articulation, but subsequently proved to be a fixation due to a malignant infiltration. Experience, therefore, teaches that a limited movement of the cord in a patient over forty which cannot be definitely explained should be looked upon as malignant until proved otherwise. Too, palsy of the vocal cord due to lesions of the central nervous system must also be ruled out. From this it must not be construed that in every case of cancer there is fixation and just because there is no fixation one should not rule out malignancy. Because when fixation has occurred, it means there is deep extension of the growth or there is infiltration at the arytenoid articulation. Limitation or impaired motion may also be caused by a neoplasm originating in the subglottic region where the growth is very often not seen above the cords. Should there be the slightest doubt, a biopsy should be resorted to. A specimen should be obtained from the most prominent part of the growth and one must be sure that it includes a portion of the neoplasm.

Pathology—Most of the cases were of the squamous or epidermoid variety of carcinoma. Case No. 56 was of the basal cell type, Cases Nos. 37, 90 and 136 were of papillary carcinoma. Case No. 77 was reported as fibroma but, clinically, it followed a typical course of carcinoma with metastases and subsequently, reëxamination showed Grade II cancer arising in a papilloma. Cases Nos. 79 and 124 were reported polypoid tissue, but both were carcinoma, clinically, and pursued a typical course of laryngeal cancer. In eleven patients there is histopathological and clinical evidence that the disease began as a benign papilloma and subsequently transformation to carcinoma occurred. The transition period was very variable, three months in one case and ten years in another. Case No. 78 was that of a male, aged fifty-seven, who complained of hoarseness of ten years' duration. At the onset the growth removed from his vocal cords was reported papilloma. Ten years later he presented himself at our hospital where biopsy showed squamous-cell carcinoma. Case 55, very similar to the above, with a history of six or seven years' duration as papilloma, at the end of seven years a specimen removed showed carcinoma. Two patients, cases Nos. 94 and 165, had gone two years as papilloma. The remaining six cases of papilloma had an interval of from five to ten months before transformation took place. It is of interest to note that all the patients in this group were males. In three patients, cases Nos. 67, 70 and 160, the laryngeal cancer was probably of bronchiogenetic origin. One case, No. 151, began as carcinoma of the thyroglossal duct and invaded the larynx secondarily through the crico-thyroid membrane.

Grades—Broders' grading of potential malignancy, modified by Gates and Warren, has been employed in our hospital since 1928, and since then thirty-eight cases have been so classified. There were as follows: Grade I, 13; Grade II, 19 and Grade III, 6.

TREATMENT

Intrinsic cancer of the larynx, although insidious in its onset, has the favorable characteristic of remaining localized for a long time, before spreading to the neighboring lymphatics. Just how long it may remain localized, one cannot say with any degree of certainty, but in some probably as long as two or three years. Furthermore, the greater number of these tumors are of low grade, Grades I and II. Therefore, if the patient can be seen early, and if he will consent to have an adequate operation performed, his chances of a permanent cure are very good. In this series, unfortunately, there were only nineteen cases considered at all favorable for operation and two submitted to operation.

The treatment carried out in this series was as follows:

Total laryngectomy	7
Laryngofissures or hemilaryngectomy	12
Partial operation with radium	20
Radium alone	33
X-ray "	37
Radium with x-ray	40
Resection of glands with irradiation	6
" " " only	2
Partial operation	2
Tracheotomy alone	17
No treatment	19
Seeds to glands	1
Branchial cleft Op. with Ra. to neck	1
Treated elsewhere—no data	4

Laryngectomy—There were seven patients who had total laryngectomy operations, one of these (case No. 175) although first seen at our hospital, was operated on elsewhere. Three are living and well, one approximately four years and the other two, three years each and four are dead. Of those dead, one survived three months, one five months, one four years and one four years and ten months.

The following is a brief detailed description of the patients who had a laryngectomy and no longer living.

(1.) Case 136 was a male patient, aged fifty-one, who had a bilateral involvement of the vocal cords in a papillary carcinoma. This is a very malignant form of neoplasm. His chief complaint was hoarseness of eight months' duration. A total laryngectomy was performed, followed by an external radium pack of 550 mc. hrs. The patient survived three months and died of pneumonia without any evidence of local recurrence. (2.) Case 141 was a man, aged fifty-four, with a tumor mass involving the right vocal band and cord with marked fixation. Although this patient was hoarse only five weeks prior to admission, there was a history of intermittent hoarseness over a period of years. The pathologist's report was Gr. I cancer. A laryngectomy was performed and two years later a small gland in the neck appeared which was removed followed by x-ray treatment. He survived four years and ten months following the laryngectomy and died of pulmonary hemorrhage. (3.) Case 175 was a male, aged forty-seven, who had a tumor of the left vocal cord of six months' duration. Biopsy report was Gr. I cancer. A laryngectomy was performed elsewhere. This patient survived four years and one month and died of cancer of the stomach with no evidence of local recurrence. (4.) Case 178 was of the subglottic type and has already been described in detail.

Of the three surviving patients (1.) case No. 172 was a patient, aged forty-five, with involvement of the vocal cord (Rt.) anterior commissure and epiglottis. The duration of his symptoms prior to admission was two months. The tumor was reported as Grade I from one part and Grade II from another section. The patient has been alive and well almost four years. (2.) Case No. 176a was a patient, aged fifty-four, with a tumor on the left vocal cord of ten months' duration. The pathological report was epidermoid cancer Grade I. The patient has been alive and well approximately three years. This patient had diabetes of quite marked degree at the time of operation and was given diabetic treatment before and following the operation. He also had Roentgen therapy following the operation. (3.) Case No. 187 was a patient, aged forty-eight, with a Grade II tumor on the left vocal cord and band of two years' duration. In addition to laryngectomy, he also had some x-ray therapy following the operation. He has been alive and well approximately three years.

All the total laryngectomies were performed by the one stage operation. A combination of the Gluck and Perier methods were employed, resecting the larynx from below upwards. The prelaryngeal muscles were resected in two cases. There were no operative mortalities in this series.

Laryngofissures or Hemilaryngectomy—In this series, there were twelve operations, nine males and three females. Of these, four are living and well, one over fifteen years, one twelve years and one ten years and five years and three months without recurrence. Of the eight dead, one died four years later of carcinoma of the stomach, there being no recurrence of the laryngeal cancer. Another patient, female, the youngest in our group, aged twenty, had a hemilaryngectomy with a bilateral window resection and died three and one-half years following her operation. One case, No. 78, had an operation ten years previously, suffered a recurrence and then died thirteen and one-half years after the original operation. Radium was used in addition to the operation in this case. Two sur-

vived one year and two months following the operation. The remaining two survived approximately seven months. There was one operative death in this series. The patient died four days following the operation from pulmonary abscess. Laryngotomy with removal of the right vocal cord and part of the arytenoid was carried out in one case.

In view of our present experience, better results by more radical primary removal should be obtainable; more complete hemilaryngectomy and more frequent total laryngectomy.

RESULTS FROM OPERATIONS—LARYNGOFISSURES AND LARYNGECTOMIES

Duration of Life Following Operation	Type of Operation	Results
15½ years	Laryngofissure with Ra.	L. & W.
13½ "	Hemilaryngectomy with Ra.	Died of recur.
12 "	"	L. & W.
10 "	"	L. & W.
5½ "	Laryngotomy with removal of cord and part of arytenoid.	L. & W.
4 years, 10 months	Laryngect. X-ray, removal of gland.	Died of Hem.
4 years	Hemilaryngectomy with Ra.	Died Ca. of stomach.
3½ years	Laryngofissure with bilateral window resect. with radium application.	Died from ext. to esophagus.
4 years	Laryngectomy.	L. & W.
4 "	"	Died Ca. of stomach.
3 "	"	L. & W.
3 "	"	L. & W.
1 year, 4 months	Hemilaryngectomy with Ra. pack.	Died of recur.
1 year, 2 months	Hemilaryngectomy with x-ray.	Died Ca. uterus.
7 months	Hemilaryngectomy with Ra. pack.	Died of recur.
6 months	Hemilaryngectomy. Diath. and Ra. pack.	Died of recur.
5 months	Laryngectomy.	Died of extension into trachea.
3 months	"	Died of pneumonia.
1 week	Laryngofissure.	Died of pulmonary abscess following operation. Op. death.

Partial Operation with Irradiation—There were twenty-one patients in this series and for various reasons a major operation was not carried out. In some of these a more radical operation was either contraindicated because of the location and extent of the lesion, or the patient declined operation. The prognosis in many of these patients was bad to start with and no hope of cure could be expected. Palliative relief was the most one could expect and this was obtained in many cases.

The procedure was to remove as much of the growth as possible, sometimes with the aid of diathermy and the implantation of radium seeds into the remainder of the growth or the region from which the growth was removed. There were five patients in this group who survived over three years as follows: seven years, nine months; six and one-half years; four years, three months; and two patients three and one-half years. One of these, case 24, had a bilateral Harmer operation plus seed insertions. The first two cases are of interest because of the comparatively long duration of survival and they are, therefore, described more in detail.

The first patient is case No. 60 (H. H. No. 22-1131) a male, aged sixty, admitted to the Huntington hospital September 1922 complaining of sore throat and hoarseness of nine months' duration. A laryngoscopy was performed and a growth was found involving the false and true vocal cords. A specimen was removed and three radium seeds, 2-3 mc. and 1.-1.5 mc., were inserted into the growth. The report of the biopsy (Path. No. 23-86) was early epidermoid carcinoma arising in papilloma.

Jan. 17, 1923—*Laryngoscopy*—Considerable mass removed from region of left true and false cord, anterior part, and from the subglottic portion of anterior wall of the trachea. Total mass was considerably greater than appeared under indirect laryngoscopy. Five seed 1.0 mc. each were inserted into base of growth at intervals of about 5 mm.

October 22, 1930—Patient died at the Pondville Hospital. At autopsy, there was a recurrence of the tumor in the larynx with regional metastases. The pathologists' report (Path. No. 30-2693) showed epidermoid cancer Gr. I.

This patient also had carcinoma of the stomach, but this was not the same tumor that was in the larynx and, therefore, not metastatic from the original lesion.

The patient who survived six and one-half years (case No. 55) was also a male, aged sixty-five, who had complained of hoarseness of six or seven years before coming to the hospital. His lesion involved the right vocal cord. The biopsy report was carcinoma. This also began as a papilloma. A tracheotomy was performed followed by partial removal of the growth and radium seed insertion.

The remaining patients in this group, although they survived less than three years, nevertheless, were considerably relieved from their suffering. Here too, were patients who very likely would have fared much better with a more

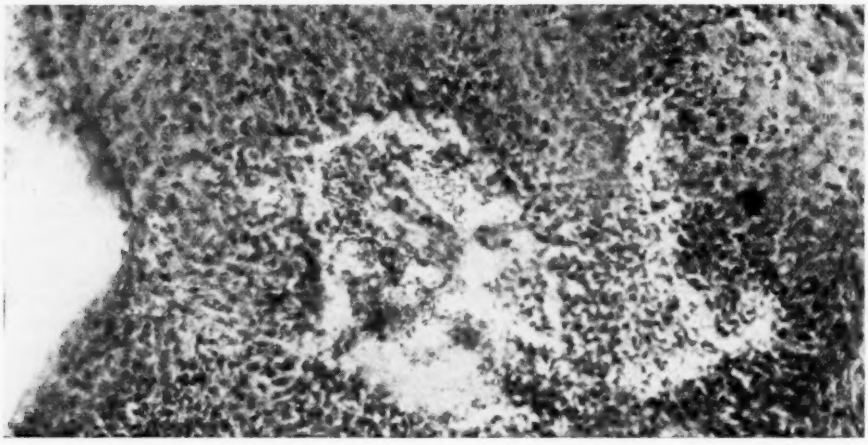

FIG. II. This is a photomicrograph of pathological section, Case No. 60, described above. It shows a papilloma with typical multiple areas of malignant transformation.

radical procedure, particularly in the cordal type of lesion.

The following table shows the results of treatment in this series:

RESULTS OF PARTIAL OPERATION WITH IRRADIATION

	Site of Lesion	Type of Operation	Duration Following Operation
1	Rt. V. cord and band	Intralaryngeal remov., seeds implanted.	7 years, 9 months
2	Rt. V. cord	Intralaryn. remov., seeds implanted Trach.	6½ years
3	Aryepiglot. fold	Partial Op. 4 years later, seed implant.	4 years, 3 months
4	Vocal cords	Trach. Part. Op. Ra. Re Op.	3½ years
5	Vocal cords	Bilateral Harmer and Ra.	3½ years
6	Lt. Int. Larynx	Part Op. Ra.	2 years, 3 months
7	Vocal cord	Part Op. X-ray seeds.	2 years, 3 months
8	Epiglottis	Trach. Part. Op. removal of Epigl. with Diath.	1 year, 6 months
9	Epiglottis	Diath. Seeds. Ra. bomb 4000 mc. hours.	1 year, 6 months
10	Vocal cord	Trach. Part Op. Ra. Pack.	1 year, 4 months
11	Vocal cord	Op. Ra. Pack Exter.	1 year, 4 months
12	Aryepiglot. fold Py. Sin.	Part removal, seeds implanted.	1 year, 3 months
13	———	Part. Op. Ra. and X-Ray.	1 year, 2 months
14	Epiglottis	Part. Op. seeds Trach.	1 year
15	Aryepiglot.	Excision with Diath., seeds.	11 months
16	Rt. Voc. cord arytenoid	Trach. Part Op. Ra.	8 months
17	Ary. ep. fold	Part Op. seeds.	7 months
18	Ary. ep. fold	Part Op. seeds.	5 months
19	Epiglottis	Part removal seeds X-ray.	3 months
20	———	Part Laryngectomy, Ra. Pack.	?
21	Vocal cords	Excision by Ext.	4 days foll. operation. Died of hemorrhage. Operative death.

There was one operative death in this group. This was in a patient who was found to have an extensive lesion involving both cords and originating in what appeared to be a thyroglossal duct carcinoma. He died of hemorrhage four days following a laryngotomy and radium pack.

Treatment with Radium Alone—There were thirty-four patients, most of whom (twenty-six) were of the extrinsic type. Many of these had metastatic glands at the time of admission. The remaining seven were of the intrinsic variety, and an operative procedure would no doubt have given better results, but for some special reason, radiation therapy was carried out. The patients in the earlier years were treated by means of the radium externally or with radium emanation seeds.

The results obtained in the past by radium treatment alone are not particularly encouraging. It is striking to note that the intrinsic type in this series fared no better, and in many cases not so well as the extrinsic. This poor result may be accounted for by several factors: (1) radioresistancy of the tumor cells; (2) the patients may have been debilitated or alcoholic and such patients rarely show a good resistance to cancers or respond well to treatment; (3) inadequate dosage or improper distribution of

radiation. (4) It has been observed that, occasionally, growths may be stimulated to greater activity when the dose employed is too small.

The center of the growth may disappear, but the periphery having received insufficient dosage continues to proliferate. The best results in this series were obtained with the first irradiation treatment, when it was adequate. Subsequent treatments were not so effective, especially if applied too soon after the primary treatment, because it is known that previous treatments often make a cancer radioresistant. If the irradiation treatment is intensive, fear of radionecrosis is great, especially so in the larynx since the cartilages are particularly vulnerable to this complication. Delayed burns have occurred years after treatment (eight years —Chevalier Jackson). Harmer believes it is due "to progressive endarteritis obliterans following irradiation in excess of local tolerance of the tissues." This type occurs more commonly in the larynx than elsewhere.

The best result was obtained in case No. 162, in spite of the fact that the lesion was an extensive one involving the epiglottis, the aryepiglottic fold and the pyriform sinus and the tumor was a Grade II, which is not particularly radiosensitive. The patient was relieved for three years. This may be explained on the basis of the relatively high dosage the patient received.

There were five patients each of whom survived one year and four months following treatment. The remaining patients were relieved approximately six months on the average. A tracheotomy was performed in nineteen patients, in most cases preliminary to radiation. In a few cases, it became urgent during or immediately following treatment. There was one death which occurred on the third day following the insertion of seeds.

Results of Treatment with Radium and X-Ray—There were forty patients in this series, some were of the intrinsic but the greater number were of the extrinsic type. The results obtained here by the combined treatment show a decided improvement over the results of either radium or x-ray therapy alone. There were twelve patients in this group who were relieved and survived over one year.

The best result here was in Case 64 (H. H. 22-1365) in a patient who lived five and one-half years following the treatment by irradiation. Unfortunately, this was a clinical diagnosis as no specimen was removed, but I don't believe that there is any doubt as to this being anything but malignant. This was in a male, aged sixty-six, who presented himself at the hospital with the complaint of a "bunch in the throat, and hoarseness." The patient further stated that three years ago he noticed a swelling in the left side of his neck which gave no symptoms except hypersensitiveness when taking hot foods. Prior to coming to the hospital, the patient consulted Dr. Abbott in Providence who referred the patient to Dr. D. C. Greene who later referred him to our hospital.

Examination—Upon the laryngoscopic examination under ether anesthesia, the growth was found to involve the left lateral margin of the epiglottis, the aryepiglottic fold, the arytenoid and the false cord.

Treatment—5—1.5 millicurie seeds were inserted in different portions of the growth less than 1 cm. apart. The patient showed signs of dyspnea and became cyanotic whereupon it became necessary to do a tracheotomy. This was carried out while the patient was still under ether anesthesia. His operation was done on November 8, 1922. In January, 1923 the patient received Roentgen treatment by Dr. Morrison.

The patient remained well and was followed in our clinic until 1928 and on June 10, 1928, a letter was received from the Town Clerk stating that the patient died of carcinoma of the esophagus.

A good result was obtained in Case No. 188. This was a male, aged fifty-six, with a Gr. I lesion in the right pyriform sinus. Ten seeds of 1 mc. each were inserted throughout the growth followed by 5100 r. units of Roentgen therapy. This patient has been living and well for three years.

Another (Case 96) survived two years, ten months.

Not unlike the previous group, most of these patients required tracheotomy prior to treatment.

There was one death in this series. This occurred in a male patient of seventy-seven who had seed implantation followed by Roentgen therapy. After the treatment the patient began to have signs of dyspnea, an emergency tracheotomy was performed and he died several days following operation.

Roentgen Therapy Only—The patients in this group were the most unfortunate in that the disease had already extended widely and in practically all cases metastases were present.

There were thirty-seven patients in this group of which sixteen required a tracheotomy on admission. Three patients had gland dissections in addition to Roentgen therapy. One received surgical diathermy to the lesion in addition to x-ray. One patient had a positive Wassermann and, in addition Roentgen therapy, was treated with potassium iodide. This patient survived three months, dying from hemorrhage due to cancer of the rectum. There were only four patients in this group who survived one year or over. The best result was in the patient (Case No. 184) who lived one year, eleven months following treatment, having received

6000 r. units probably one of the largest dosage to date. The average duration of life following treatment in the remaining cases was six months.

No Treatment—There were nineteen patients who received no treatment. In twelve of these the duration of life following the first visit is not known. Three of this group lived over one year. One patient, Case No. 102, was a man, aged seventy-two, who had an early lesion on the right vocal cord which was still mobile. He refused treatment and survived five and one-half years, finally dying from involvement of the esophagus. This illustrates an early intrinsic type of carcinoma of the larynx, its slow growth and finally the extension of the growth to involve the esophagus. The average life in the remaining cases was five months.

Complications — With the exception of cervical metastases, the most frequent complication was involvement of the esophagus. This was present and recorded in seventeen patients of whom thirteen were in males and four in females. The ratio of postericoid involvement in females is much greater than it is in males and for this reason, the incidence of esophagus complication in females is much higher. Death from hemorrhage occurred in four patients. Pneumonia accounted for two deaths following operation. Mediastinal abscess and abscess of the throat, one each. In two patients, carcinoma of the stomach is recorded as the cause of death, one four years and one six and one-half years following treatment for cancer of the larynx. One patient died of carcinoma of the uterus one year and two months following treatment of the larynx.

I wish to express my sincere gratitude to Dr. Edwards W. Herman, the chief of the Laryngological Staff, and Dr. Shields Warren for their many helpful suggestions in the preparation of this paper.

SUMMARY AND CONCLUSIONS

1—This series embraces 202 cases, 81 intrinsic and 101 extrinsic cases of cancer of the larynx. In 20 cases, the site was not stated.

2—We recognize leukoplakia as a precancerous lesion, and that papilloma not infrequently undergoes malignant transformation.

3—The relative infrequency of laryngeal cancer in females compared to males.

4—The fifth decade of life shows the greatest incidence of cases.

5—The triviality of the symptoms in proportion to the seriousness of the disease.

6—The relatively slow course of intrinsic carcinoma and the relatively low-grade malignancy offers ample time for thorough surgical treatment with a good prognosis.

7—The early diagnosis offers a patient his best chance of cure.

8—It is our opinion that surgical removal of the growth in the early operative intrinsic type offers a good chance of permanent cure.

9—In certain types of not entirely operable tumors, which are highly radiosensitive, the combination of surgery and irradiation have produced good results.

10—In the far-advanced cases of metastases, we rely entirely on irradiation for temporary relief.

11—We feel that the treatment by irradiation, up until very recently, has been inadequate, and our entire conception of this method of treatment is being revised.

12—Out of a total of nineteen operative cases of proved cancer, seven are living and well, the longest duration fifteen and one-half years, the shortest three years, to date of publication.

13—If it can be shown that radiotherapy can produce as high a percentage of permanent cures as surgery, it will be a safer method of treatment and will be welcomed by the surgeon and a blessing to the patient.

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GIANT DIVERTICULA OR REDUPLICATIONS OF THE INTESTINAL TRACT*

Report of Three Cases

BY HENRY W. HUDSON, JR., M.D.†

CONGENITAL cysts and diverticula (other than Meckel's) and partial reduplications of the intestinal tract are unusual congenital anomalies. They may be of clinical importance because of the symptoms produced and the possibility of surgical relief. We have found eighteen reduplications or giant diverticula reported to which we may add three.

CASE 1

A. C. S., No. 153126, a male infant of three months was admitted to the surgical service of the Boston Children's Hospital on September 16, 1931. The family and birth histories were not important. He had developed normally and been well until one week before admission when he developed a greenish, watery, diarrhea. For three days he had from five to seven dejections. The stools then decreased in number and size and for the five days preceding admission had been soft and black in color. He had vomited once, three hours before admission, the vomitus consisting of part of a recent feeding. He had not appeared ill until twelve hours before admission when he developed periods of pallor during which he appeared to have abdominal pain, cried, and drew his legs upward toward the abdomen. There had been no medication. There was no history of pica or of purpura. The physical examination was normal except for pallor and the local abdominal examination. There was slight generalized abdominal muscle spasm with tenderness more marked on the right. An ill-defined mass was felt just above and to the right of the umbilicus.

Intussusception was considered a probable diagnosis. Henoch's purpura was also considered. Bleeding and clotting times were normal.

Abdominal exploration was made soon after admission.

First operation. September 16 under ether anesthesia a right rectus muscle splitting incision was made. There was no free fluid within the peritoneal cavity. A search for an intussusception or evidence of reduced intussusception revealed neither. Throughout the base of the mesentery of the small intestine were numerous petechial hemorrhages and there was enlargement of the mesenteric lymph nodes. About eighteen inches above the ileocecal valve and within the leaves of the mesentery of the ileum, a walnut-sized mass was encountered. In this mass, and adjacent to the ileum, a small perforation about 2 mm. in diameter was noted. Through this perforation clotted blood was extruded. The perforation was incised thus exposing the lumen of the mass which presented a mucosa similar to that of the ileum but it did not appear to communicate with the ileum. It was filled with blood clot which was removed. There was one small bleeding point which was easily controlled. The infant's condition was unsatisfactory and it appeared unwise to remove tissue for examination. The cystic mass was sutured and the abdominal wall closed in layers. The infant was returned to bed in fair condition, with diagnosis undetermined.

Course. The infant was transfused and parenteral fluids were administered with improvement. For six days after operation there was a decreasing amount of blood in the stools. He was afebrile. The wound healed well and he was discharged October 3, 1931 in apparently good condition.

Laboratory data. Urine negative at five examinations except for acetonuria at the time of admission. Red blood cells 2,900,000 and hemoglobin 45 per cent on admission; 3,400,000 and 62 per cent on September 22. White blood cells 11,400 and 8,200 with normal differential. Bleeding and clotting time normal. Platelets 250,000. Stools guaiac positive from September 18 to 28, and guaiac negative on October 1 and 2.

Interval note. The infant did very well, gained four pounds, apparently had no pain, and his color improved. There were one or two stools daily, apparently normal.

Second admission. December 31, 1931 at six months of age. Thirty-six hours before admission he had a greenish, watery, stool. Twenty-four hours before admission and the day of admission there were similar stools. He was admitted for observation.

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Except for the healed abdominal scar, the physical examination was normal. The stools were found to contain blood. He was observed from December 31 to January 6, 1932 during which all stools contained blood and his red blood cells fell from 4,500,000 to 2,790,000. He was transfused on January 5.

Second operation. January 6, 1932 under ether anesthesia. An incision was made over the right rectus muscle parallel to the previous operative wound and the muscle belly was retracted laterally. The peritoneum was incised and a mobile cecum with primitive mesentery presented. The ileocecal valve was identified and the ileum inspected. The mesentery was of the primitive type. About two feet above the ileocecal valve a diverticulum running in the leaves of the mesentery was identified. The mesentery was split and the diverticulum found to be about the caliber of the ileum for perhaps two inches, then to constrict to a cord-like structure which disappeared in the root of the mesentery. This diverticulum was resected from the root of the mesentery up to the reflection of the mesentery over the ileum and it was then noted that the diverticulum curved to run distally, parallel to the ileum and within the leaves of the mesentery, toward the ileocecal valve for about sixteen inches. No point of communication with the ileum was demonstrated. The operation had occupied nearly an hour and to complete the resection would have extended the procedure unduly and would have required partial resection of the ileum as well. For this reason the diverticulum was closed. The wound was closed in layers without drainage and the infant returned to bed in good condition but with the expectation that at some future time the remainder of the diverticulum would be excised, possibly with resection of the ileum.

Histologic report. S-32-6. GROSS DESCRIPTION: The specimen has the appearance of a part of the intestinal tract. It is definitely in four sections. The whole length is 9.5 cm. Part A is 1 cm. in length and was described at operation as being lost in the root of the mesentery. This has the appearance of a cord about 4 mm. in thickness. On cutting it open, it is found to contain a small lumen and in the resection this lumen has been cut across. Adjacent to this is Part B which measures 2 cm. x 2 cm. when opened. Part C is 1.5 cm. in length and 3 cm. in width when opened. It has a similar appearance to Part A, except that it is a little more hemorrhagic. The fourth section, Part D being the largest, is 5 cm. in length and when opened out is 2 to 2.5 cm. in width. The lumen which is patent throughout the specimen is lined with a mucous membrane. The mucosa of the largest section is folded in fairly normal looking rugae which run across the specimen for the distal 1.5 cm. and in folds generally along the length of the specimen for the next 2.5 cm. At approximately the junctions of these two portions distinguished by the configuration of the rugae, there is a small punched-out ulcer with raised and undermined borders 2 mm. in width, the base of which is quite hemorrhagic. The serosal surface outside this ulcer is definitely thickened. The mucosa of Part B is paler and the rugae are arranged in less definite folds of a more or less circular configuration. When opened at operation, there was no fecal material seen within the lumen.

MICROSCOPIC: There are six sections taken for microscopic study. These sections are taken as indicated in the diagram No. 1 from Part A, No. 2 and No. 3 from Part B, No. 4 from Part C, No. 5 through the ulcer, and No. 6 through Part D.

Section No. 1. This section is cut across the unopened lumen of Part A. The mucosa is in a general way characteristic of the small intestine. It is thrown up into numerous villi and lined with a simple columnar epithelium. There are a moderate number of goblet cells which give evidence of mucous secretion. The muscularis is composed mostly of circular muscle fibers with only a few longitudinal bundles. There is no evidence of inflammation or hemorrhage in this section.

Section No. 2 is cut across the point where the small lumen of Part A opens into the larger second portion. At this point there is a transition from the mucosa described above to a mucosa resembling gastric mucosa. This is characterized by the appearance of rather typical gastric glands. The mucosa is thrown into numerous folds. Scattered through the tunica propria are abundant eosinophiles. The submucosa and muscularis are not unusual. A second section (No. 3) farther along in this portion shows the same type of mucosa. In addition there are a few small, highly cellular lymph follicles.

A section (No. 4) through the thin connecting portion (Part C) shows a reversion to the type of mucosa found in Part A. The mucosa here is thinned out and less well preserved.

The large portion (Part D) shows again a fairly typical gastric mucosa similar to Part B. Here again there is abundant eosinophilic infiltration such as is frequently found in adult gastric mucosa. There is a greater number of lymph follicles here than are seen in the previous sections, and the propria is somewhat more dense and cellular, containing a larger number of lymphocytes. One section transects the ulcer which was described grossly. The ulceration has entirely destroyed the mucosa and extends through the submucosa involving part of the muscularis. There is a dense fibroblastic reaction at the base of the ulcer and a serosal proliferation of fibroblasts. Numerous pyknotic nuclei and polymorphonuclear leucocytes are scattered through the regions just below the base of the ulcer. There is considerable hemorrhage into the underlying serosa. No blood vessels can be seen to be eroded by the ulcer. One neighboring vessel is partially occluded by an organizing thrombus.

SUMMARY: This specimen consists of an anomalous diverticulum which shows a transition in the type of its mucosa from that of the small intestine to that of the stomach. The latter contains a small ulcer.

Course. Blood transfusion was performed immediately after operation. There was a postoperative rise in temperature to 103.4° which subsided within thirty-six hours and thereafter remained normal. His condition was good at the time of discharge on January 19.

Laboratory data. Urine normal at the examinations. Red blood cells 4,650,000 on admission, hemoglobin 70 per cent, on January 4, 2,790,000 and 46 per cent, on January 6 (after transfusion) 5,750,000 and 70 per cent. Stools guaiac positive from January 1 to January 13 and guaiac negative on January 16, 18 and 19.

Interval history. The infant did well, gained in weight and there was no melena. On March 23, 1932 he developed a respiratory infection. He was readmitted March 27, 1932 and discharged March 30, 1932 to the Infants' Hospital with bronchopneumonia. There he ran an uneventful course and was discharged relieved on April 12, 1932.

Interval note. The infant was well, weight and development normal. His appetite was good, the bowels regular.

Fourth admission June 15, 1933 at two years of age. The day before admission he passed a black stool. He was admitted for observation. The physical examination was not noteworthy. He was observed until June 23. His stools always con-

tained blood. His red blood cells fell from 4,000,000 on admission to 3,750,000 and the hemoglobin from 60 per cent to 40 per cent. Marked achromia developed.

Third operation: June 22, 1933 under avertin and ether anesthesia an incision was made between the two scars of earlier operation and developed through the rectus sheath. With some difficulty the muscle was retracted. The peritoneum was opened without incident, except for the escape of an excess of clear fluid (culture negative). The terminal ileum and its reduplicated portion were demonstrated. It was evident that removal was possible only by resection of a part of the ileum. The ileum in its duplex segment was resected for about fifteen inches. Following resection and just as an anastomosis was begun the infant ceased breathing and became pulseless. The change was sudden and a minute or two earlier the anesthetist had reported a pulse rate of 132 and general condition satisfactory. Various methods of resuscitation were unsuccessful. There had been practically no bleeding and although the operation had occupied an hour and might be considered to have caused shock, there was no warning of this fatal accident. Whether or not there was embolism was a matter of conjecture.

Histologic report. S-33-298 and S-33-125 GROSS DESCRIPTION: The specimen consists of a portion of resected ileum measuring 38 cm. in length. It averages 3.2 to 3.5 cm. in width when lying flat. Within the mesenteric attachment throughout 35 cm. of its length there is a secondary portion of bowel which communicates with the main ileum by two small openings 3 mm. in diameter through which there may be expressed small amounts of clear, mucinous fluid containing white, flocculent material. The mucosa of the ileum contains occasional petechial hemorrhages and localized areas of congestion. The mucosa is in general pinkish-yellow to pinkish-brown in color and possesses a slightly edematous pale gray mucosa with circular rugae. In the proximal end of the blind pouch there is a black silk suture put in at the time of the previous operation. At the distal end of the blind segment there is an ulcerated area 1.8 x 1 cm. in its various diameters. Within the mid-portion of the blind segment there is a rather sharply demarcated segment of mucosa 3 cm. in length in the center of which are two small punched-out ulcerated areas 4 mm. in diameter, one of which communicates with the ileum. Throughout the remainder of the mucosa of the blind segment there are occasional petechial hemorrhages.

MICROSCOPIC: Seven sections including four of the diverticulum, two of the ileum, and one of the communication between the two structures show a diverticulum with gastric mucosa showing chronic ulceration and slight acute ulceration. The ulceration occurs at the communication between the ileum and the diverticulum. At this site the mucosa of the diverticulum is ulcerated and the mucosa infiltrated by lymphocytes and eosinophiles. There is slight secondary lymphoid nodule formation. There is one small area of acute ulceration right at the junction between the two structures resulting in intense polymorphonuclear leucocytic infiltration of the submucosal stroma. The other four sections of the diverticulum show intact gastric mucosa. This is composed of typical large mucous crypts, at the base of which are numerous small typical gastric glands, containing acid and chief cells. The mucosal stroma is somewhat edematous and lightly infiltrated by eosinophiles. There are a few areas of lymphocytic infiltration around the base of the gland. The two sections of ileum are essentially

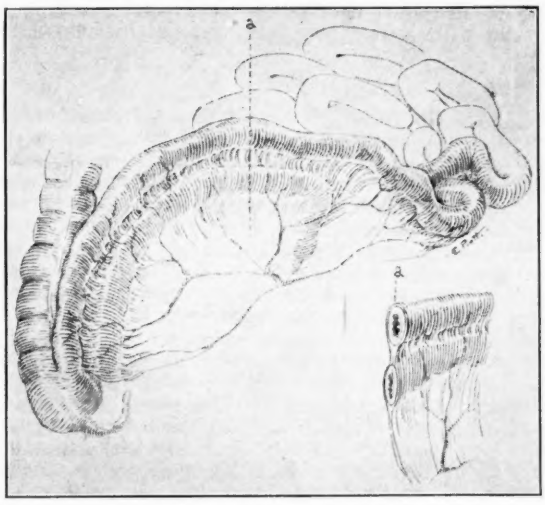

ILLUSTRATION NO. 1.

Drawing to demonstrate the anomaly in case No. 1. The segment between the root of the mesentery and point "a" was successfully resected at the second operation. Reproduced by courtesy of the *Rhode Island Medical Journal* (27: 22 [Feb.] 1934).

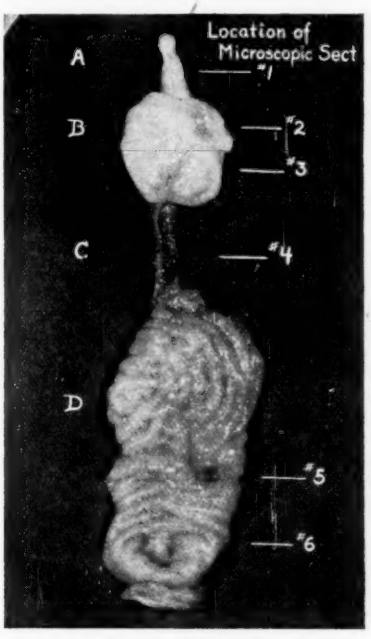

ILLUSTRATION NO. 2.

The specimen removed at the second operation in case No. 1. The microscopic details are given in the case report. This illustration previously appeared in this *Journal* (208: 533 [Mar. 9] 1933).

ILLUSTRATION NO. 3.

The reduplicated ileum removed at the third operation in case No. 1.

negative with typical ileal mucosa, the stroma of which contains moderately hyperplastic lymphoid tissue with a few secondary lymphoid nodules.

CASE 2

L. A. No. 168771 a white female infant of six months was admitted to the surgical service of the Boston Children's Hospital on February 15, 1933. The family, birth, and developmental histories were not unusual. Two months before admission she was ill with cough and fever and a diagnosis of bronchitis was made. She grew irritable and slept poorly. Two weeks before admission she began to vomit occasionally between feedings. The abdomen enlarged and vomiting increased. There was loss of weight. The stools became infrequent and enemata were administered with good returns. No blood was recognized in the stool except for one "speck" two days before admission. The stools were green and contained mucus. Several days before admission the vomitus was bile stained. There was intermittent fever for several days preceding admission.

Examination on admission revealed a well-developed and fairly well-nourished infant appearing chronically ill. The rectal temperature was 99°. The general examination was essentially negative. Local examination: The abdomen was markedly distended and splinted. A firm non-tender mass occupied the right lower quadrant. This mass was palpable through the rectum.

Laboratory data. Two examinations of the urine were not abnormal. Red blood cells 5,050,000. Hemoglobin 80 per cent. White blood cells 12,000. Differential normal for age. Wassermann and Hinton negative. Tuberculin 1:1000 negative. Nonprotein nitrogen 14 mg. per cent. Phenolsulphonphthalein excretion 60 per cent in two hours and ten minutes.

X-ray examinations. February 15, 1933. "The lung fields are essentially clear. A film of the abdomen shows considerable distention which is due not so much to gas in the intestines as to fluid in the peritoneal cavity. There is also some free air under the liver in the right upper portion, evidently the result of a ruptured viscus." February 16. "Reëxamination of the abdomen. There is more distention due to the peritoneal fluid. I can no longer make out definite free air."

Operation: February 16, 1933. Ether anesthesia. By means of a right rectus muscle-splitting incision the peritoneal cavity was exposed and found to contain a large amount of bloody fluid. A large mass presented in the right lower quadrant. When delivered it appeared to consist of over a foot of greatly distended small intestine with markedly enlarged lymph nodes in its mesentery. There were also within the mesentery several cysts which apparently did not communicate with the intestine. Both the intestine and cysts were deep purple in color and in several areas there was a yellow fibrinous exudate. A resection of the affected intestine and mesentery was made and a "double-barreled" enterostomy performed. The infant was returned to bed in poor condition.

Course. The infant's condition was poor for the first three days after operation. Parenteral fluids were administered and by February 20 her condition had improved. There had been great fluid loss through the proximal stoma of the enterostomy. On February 21 a clamp was applied opposing the proximal and distal loops (Mikulicz procedure). One week after operation the wound edges separated allowing eventration of a part of the small intestine. The wound was resutured and at this time there was evidence of peritonitis. Twelve hours later the infant died.

An autopsy was performed. A33-39. The anatomic diagnoses were:

Jejunum duplex.
Enterostomy.
Peritonitis, organizing.
Bronchopneumonia.
Splenitis and perisplenitis.
Esophagitis.
Lymphadenitis, mesenteric and mediastinal.
Decubitus ulcer, occipital.
Extracortical adenoma of adrenal glands.
Persistence of "Jackson's veil" and of anterior mesentery.

The resected specimen is described. GROSS DESCRIPTION: The specimen consists of a segment of jejunum and a portion of its attached mesentery opened in the operating room. The segment of bowel measures 45 cm. in length and the mesentery varies from 2 to 5 cm. in width. The serosa is extremely congested, slightly dulled and shows irregular areas of ecchymosis. The mucosal surface of the jejunum is of normal pinkish to brownish-gray in color, soft and shows the usual prominent plicae circulares. At approximately 15 cm. from one end there is an irregular depression in the mucosal surface which is rather smooth and measures 2 x 1.3 cm. Lying within the leaves of the mesentery is an extremely thick-walled cystic mass of irregular form but shaped much like a pancreas in that there is dilated portion at one end 6 cm. in diameter tapering off at the other end to an average diameter of 2.5 cm. The whole structure is 22 cm. in length possessing a thick double muscular wall varying from 7 to 8 mm. The lining is generally smooth and shiny although extremely hemorrhagic in some areas and varies from pale yellowish-gray to pinkish-gray. The most hemorrhagic portion of the lining is associated with the large dilated end. At the opposite (tapered) end there are two constricted areas 1.5 cm. in length, the lumen of which is 3 mm. in diameter. Between them there are two dilatations of this elongated cystic structure measuring 1 cm. in diameter. In the mid-portion 8.5 cm. from one end near the portion of the structure adherent to the jejunum there is an irregular mucosal ulceration, the serosa and wall over which is less than 1 mm. in thickness. There is no perforation in this region. The serosa overlying the entire specimen is extremely congested and in places there are small accumulations of yellowish-brown, fibrinopurulent exudate. Another area of acute ulceration exists within the large, dilated portion 1 cm. in diameter, the serosa over which is dulled, congested and brownish-gray. The wall at this point is approximately 1 mm. thick but there is no perforation.

MICROSCOPIC: Seven sections show a chronic ulceration and gastric mucosa in the wall of a diverticulum. The mucosa of the typical gastric type showing large open crypts at the bases of which there are branching gastric glands containing acid and chief cells. The stroma is markedly congested and hemorrhagic, especially between the openings of the crypts. There are variable numbers of infiltrating polymorphonuclear leucocytes throughout. Two areas of chronic ulceration are devoid of mucosa. The surface contains a small amount of fibrinous exudate, while the underlying wall is markedly fibrosed and infiltrated with variable numbers of mononuclear phagocytes, polymorphonuclear leucocytes, and lymphocytes. A portion of the wall taken from the extreme tip shows a mucosa somewhat different from the rest, in that

there are no active secreting cells. The crypts and glands are of mucous type, although the general form and arrangement of the gland is similar to that seen in gastric portion. The submucosa in the non-ulcerated portion shows mild congestion, but beneath the ulcerated portions it is more or less scarred. The muscularis is of two layers with areas of diagonally running smooth muscle fibers in addition. The serosa is edematous, congested, and infiltrated by a variable number of lymphocytes, polymorphonuclear leucocytes, and mononuclears. There is no evidence of fibrinopurulent exudate upon the serosal surface. Several lymph glands included within the loose edematous serosa and from the mesentery show a mild hyperplasia with occasional infiltrating mononuclear phagocytes in the follicles. The medullary cords of the nodes are densely packed with small mature lymphocytes.

DIAGNOSIS: Jejunum duplex type with gastric mucosa showing acute and chronic ulceration.

NOTE: There is no communication between the jejunum and the diverticulum. Sections through the dimpled areas where the two structures are adjacent show a double muscular wall with a slight amount of intervening fibrous tissue.

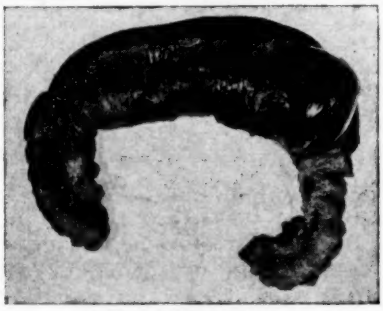

ILLUSTRATION NO. 4.
Jejunum duplex. Description in case report No. 2.

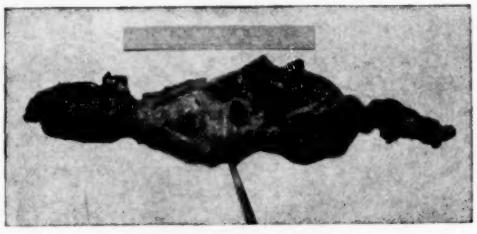

ILLUSTRATION NO. 5.
Jejunum duplex, opened. Case No. 2.

CASE 3

D. M. a white female of twelve years was admitted to the Peterborough Hospital at 8:30 A.M. March 2, 1935. The family and birth histories were not unusual. From infancy she had failed to gain normally, was undernourished and was considered "sickly". As an infant she cried for hours at a time apparently from abdominal distress. At two years she was said to have had "Bright's disease" characterized by hematuria for two months. From the age of three years she had frequent attacks of cramp-like abdominal pain referred to the umbilicus and lasting from a few minutes to several hours. These were usually accompanied by nausea and vomiting. During some attacks relief was obtained from a carminative, and eructations occurred. During the attacks the child usually flexed her thighs on the abdomen, or if seated would bend forward and place her head on her knees. She could not be induced to change position until the attack was over. At times she would fall asleep in this position.

In November 1934 she was observed for a two-week period by the pediatric service of the Children's Hospital. During this time she had several attacks of pain which were not severe. A gastro-intestinal series, pyelography by the intravenous method, and various examinations of the blood gave negative results and she was discharged undiagnosed. The attacks continued and during the two months preceding admission had become more frequent and severe. Hardly a day passed without some discomfort.

At 3 A.M. March 1, 1935, twenty-nine hours before admission she awakened from sound sleep with severe cramp-like abdominal pain located in the umbilical region. The paroxysms lasted two to three minutes, gradually diminished, and the child would doze to be awakened in five to ten minutes by more pain. This colic lasted from 3 A.M. to 4 P.M. and was accompanied by nausea and vomiting. The vomitus consisted of the fluids that she had taken eagerly. She was very thirsty. At 3 P.M. her physician administered 1/8 gr. of morphine and she rested comfortably without pain or vomiting for about five or six hours. She had passed flatus and there was a dejection of fecal material following an enema at 8 A.M. When the mother tried to rub the child's abdomen, she complained it was too tender to be touched.

During the twelve hours preceding admission there was pain of the character described. She vomited frequently until fluids were denied her several hours before admission. During the automobile ride to the hospital the pain became more steady and severe and the child cried continually with pain. She begged for water.

On admission, examination disclosed a very pale, undernourished and underdeveloped child in great distress. The mouth temperature was 100.6°, the pulse rate 160, and the respiratory rate 44. Her breathing was difficult, and irregular and she grunted frequently. She lay in bed with the knees flexed and her hands were held in the region of the umbilicus. She cried continuously and begged for water. The skin and mucous membranes were pale. She appeared dehydrated. The abdomen was moderately distended, there was voluntary generalized muscle spasm, and diffuse tenderness. An indefinite tender mass occupied the entire hypogastrium. Two physicians considered her moribund.

The white blood cells were 20,000 with 74 per cent neutrophiles, the red cells were 3,820,000. The hemoglobin was 54 (Sahli). The urine showed slightest possible trace of albumin, a trace of sugar and the sediment a few hyalin casts and a rare white blood cell.

By infusion 200 cc. of normal salt solution and 250 cc. of citrated blood were administered, and 600 cc. of salt solution was introduced beneath the skin. One-twelfth gr. of morphine was administered at 8:30 A.M., 10:30 A.M., and 1 P.M. Her general appearance and color improved.

It was felt that intestinal obstruction, cause unknown, was the probable diagnosis, and operation was elected.

Operation. March 2, 1935. 3 P.M. Peterborough Hospital.

With novocaine infiltration a right rectus incision with mesial retraction of the muscle belly was made. When the peritoneum was incised, sanguineous fluid escaped in large amounts. Ether anesthesia was induced and the wound enlarged to about eight inches. The peritoneal cavity was filled with old liquid blood and great masses of clotted blood. No fresh blood was apparent. The blood

clots were most numerous over the mesentery of the small intestine adjacent to the umbilicus. A mass which proved to be a volvulus of the terminal ileum was delivered. The volvulus involved about four feet of the lower ileum, and had rotated clockwise for about 80 degrees. The ileum was edematous but not greatly distended. Within the mesentery, parallel and intimately opposed to the mesenteric edge of the ileum, was a reduplication of the bowel for a distance of about four feet. Near its proximal end was a large perforation about one and a half inches in diameter from which a small amount of bright blood escaped. There was no evidence of intestinal contents escaping, nor was the peritoneum inflamed. Through the perforation a mucosa thrown into rugae was clearly visible and within the folds of mucous membrane a small ulcer was seen from which there was a steady ooze of fresh blood. The volvulus having been reduced there was no apparent obstruction. The child's condition was poor and it seemed unlikely that she could survive resection. Accordingly the bleeding area was cauterized and the ruptured area sutured. The intestine was returned to the abdomen and the abdominal wound closed. The child returned to bed in poor condition.

Course: Following operation, the child was white and even more colorless than before. Radial pulse could be obtained, but not counted. However, she improved gradually and nine hours later she was talking and seemed very comfortable. Her after-care consisted of Levine tube; morphine sulphate, gr. 1/12 every three or four hours as necessary; sips of clear liquid by mouth; Fowler's position.

March 3, 1935. 9 A.M. Patient had a reasonably good night, sleeping in naps. Complained of nausea once, but there was no vomiting. Temp. 103.6° rectally, pulse 140-160. Very pale. Passing no gas per rectum. Abdomen shows moderate high distention for first time. Levine tube is clear. RBC 3,400,000, Sahli 42 per cent. WBC 5,850, Polys. 59 per cent. Catheterized and four ounces of urine obtained which showed the slightest possible trace of sugar, few hyaline casts, few granular casts, rare red and white cells.

12:25 P.M. The patient has suddenly become very restless and very pale. Has severe air hunger and has pulled Levine tube from her nose. Given one ampule of adrenalin chloride and oxygen inhalations. She has quieted down and is resting comfortably.

1:30 P.M. Upper abdomen seems much more distended. Swathe loosened. Levine tube is clear. It is impossible to get a radial pulse and respirations are becoming labored.

2:45 P.M. Has vomited a small amount of dark brown fluid. Died a few minutes later.

DISCUSSION

The anatomic relations and the gross and microscopic structure of these three reduplications or giant diverticula place them in the category of developmental anomalies of the gastrointestinal tract. These are to be differentiated from the lymphatic or chylous cysts, urogenital cysts, and the dermoids and teratoids which occur within the peritoneal cavity.

The anomalies of gastrointestinal origin form a rather well-defined group (Ewing[1]) characterized by a smooth musculature arranged in layers as in the tract proper. A well-defined mucosa is often demonstrable which may resemble closely the mucosa of any part of the normal tract. This mucosa is not infrequently altered or disrupted by inflammation, heterotopia, intracystic pressure and, perhaps, by digestion from the secretions produced. A well-defined submucosa is usually present. There is wide variation in size, form, histologic arrangement and in position with reference to the several segments of the digestive tract. Thus they occur at any part of the tract including the mediastinum. Their distribution in 102 cases is shown in table 1. They may communicate with or be separated from the lumen of the digestive tube. At times they may be intimately attached to the wall of the intestine and present as cysts within its lumen, or within its wall in either submucous, intermuscular, or subserous positions. They occur between the leaves of the mesentery and in retroperitoneal positions. They may be single or multiple, large or small and may or may not be associated with other congenital anomalies. There are six theories to explain their development.

TABLE 1

DISTRIBUTION IN 102 REPORTED CASES OF CONGENITAL ENTERIC CYSTS, DIVERTICULA AND REDUPLICATIONS

Mediastinal or Esophageal Cysts		10
Associated with Abdominal Cysts	6	
Gastric		6
Duodenal		8
Biliary		1
Jejunum		12
Ileum (not including Meckel's)		47
Ileocecal	26	
Appendix		1
Colon		2
Rectum		3
Reduplications		18
		108

(1) Atavism. Reversion to an earlier phylogenetic form based on the occurrence of bifid ceca in certain fowl and multiple diverticula in certain fish.

(2) Twinning in which case "the stimulation to reduplication, although acting at an early stage of cell division has affected a certain section only of the embryo" (Edwards[2]). This theory is applicable to the reduplications of segments of the intestinal tract but less clearly to the cysts and diverticula.

(3) Through the development of a median septum. The support for this belief is a specimen in the Museum of the Royal College of Surgeons of the small intestine of an ox. To one side of the intestine is a long tubular cyst of the same calibre as the intestine itself. There is no communication with the intestine and the mucosa of the cyst and intestine are dissimilar.

(4) Sequestration of a segment of the intestinal tube. For this theory evidence is adduced by the arrangement of a collected series of cysts (by Evans[3]) which shows successive steps in the hypothetical passage of a cyst from the

lumen of the intestine through its wall and into the mesentery. This presupposes a segment to be sequestrated, however, and as Evans points out the most likely explanation is that of the epithelial buds described by Lewis and Thyng[4].

(5) Persistence and alterations of the vitelline duct or Meckel's diverticula in their several forms. The persistence of a normal fetal structure, the vitelline duct, accounts for many cysts and diverticula. However only those which occur in relation to the distal portion of the ileum may be so classified and the presence of multiple cysts or diverticula precludes such an explanation in certain cases as two diverticula of Meckel never occur in the same individual. In many reports any enterogenous cyst or diverticulum occurring in relation to the ileum, and particularly in the ileocecal region, has been classified as Meckel's in type. This may be true or false and other interpretations are possible as some of these examples are similar to cysts and diverticula found in relation to jejunum, duodenum, stomach, or esophagus. Heterotopia of the lining mucous membrane is common in Meckel's diverticula (67 per cent Hudson[5]) but also in other anomalies. Heterotopia is also observed following the healing of an inflammatory lesion in the otherwise normal intestinal tract.

(6) The nodules of Lewis and Thyng[4]. These investigators found very regularly in pig, rabbit, and human embryos nodules of epithelial cells occurring along the course of the esophagus, stomach, and intestine which become vacuolated and may be separated from or be in continuity with the lumen of the intestinal tract. Normally these disappear or coalesce to form a part of the lumen of the digestive tube but they may persist. Evans[3] has represented diagrammatically their translation from positions adjacent to the lumen, through the wall and into the mesentery. Evidence in support of this origin is found in Evans'[3] collected cases some of which have an anatomic similarity to the embryologic structures pictured by Lewis and Thyng. Additional evidence for this belief is found in a consideration of those mediastinal cysts which are enteric in type since the nodules are present at a period of embryonal development consistent with their inclusion within the thorax. It is stated also (by Poncher and Milles[6]) that mediastinal cysts and abdominal cysts of enteric origin occur in the same individual but that no combination of mediastinal cyst and typical Meckel's diverticulum has been reported.

The evidence, then, favors the belief that the nodules of Lewis and Thyng are the antecedents of those cysts and diverticula of enteric type which are not typical of those described by Meckel. This view is held by Evans[3], Drennen[7], and Poncher and Milles[6]. Edwards[2] favors the explanation by twinning for the giant diverticula and reduplications.

Anomalies of this type do not necessarily cause symptoms and in some instances have been incidental findings at the autopsy of an individual dead of an unrelated cause. Frequently they are responsible for serious symptoms and death of the individual. The symptoms produced by those located within the abdomen may be broadly grouped as, (a) intermittent abdominal distress or pain (as in No. 2 and No. 3 of our cases), (b) intestinal obstruction (as in No. 2 and No. 3), (c) hemorrhage into the intestinal tract or peritoneal cavity or both as in No. 1 and No. 3, and, (d) a palpable abdominal tumor as in No. 2 and No. 3. These symptoms are readily understood since obstruction partial or complete may be produced by encroachment of a cyst or diverticulum on the lumen of the intestine, and by the production of volvulus and of intussusception. These explanations are in accord with the observations made in the reported cases. Hemorrhage, which may be of serious degree as in No. 1 and No. 3 of our cases, is best explained by the formation of ulcers in the mucosa adjacent to heterotopic gastric mucosa. This is a relatively frequent occurrence in Meckel's diverticula (31 per cent Hudson[5]) and in a few instances the presence of a secretion chemically similar to gastric juice has been demonstrated.

A correct diagnosis previous to operation is nearly always impossible but it is a wise rule in infancy and childhood to consider a congenital anomaly as a possible cause of obstruction, of melena, or of a confusing clinical picture. Thus in sixty-seven of the reported cases where the patient's age is stated there were fifty under twenty years of age. Thirty-two were two years of age or younger. As might be anticipated the sex incidence is essentially equal, eighteen male and twenty-two female in forty reported cases.

In the eighteen instances of reduplication or giant diverticulum which we have found in the literature only five were demonstrated at operation.

The anomaly in Fairland's[8] patient was similar to that in our case No. 2. He performed an enterostomy for imperforate anus. The infant died and autopsy revealed a diverticulum, thirteen inches long, which arose from the duodenum "about 1½ inches" below the pylorus.

Fitz[9] described a specimen from the Warren Museum. It is from an infant about ten months old who had been under the care of Dr. Joseph Stedman of Jamaica Plain who reported that the infant died with symptoms of intestinal obstruction. It would be presumptuous indeed to alter Fitz's description which accompanies illustration No. 6. The specimen is similar to the anomalies found in our cases No. 1 and No. 3.

Garnett Wright[10] demonstrated, at operation, a diverticulum thirty-seven inches long commencing at the upper end of the sigmoid colon and running obliquely downward between the

leaves of the mesosigmoid loop and passing behind the posterior parietal peritoneum. The blood supply in Fitz's case (q.v.), Wright's case, and in our three were similar in that the vessels supplying the normal intestine were peripheral to or branches of those supplying the diverticulum or reduplication. Technical-

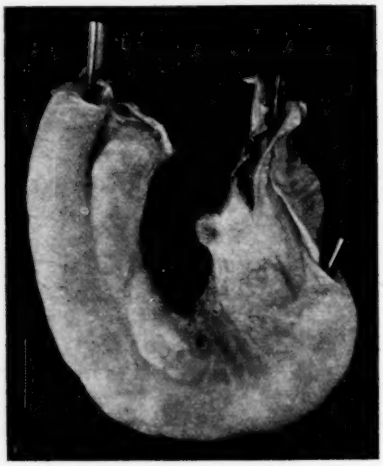

ILLUSTRATION NO. 6.

The specimen described by Fitz (From the Warren Museum).

"Two more or less parallel intestinal tubes, cut transversely across in their continuity, are continued within a single mesentery. The blood vessels of the latter terminate in the wall of the outermost tube, first supplying branches to the inner tube. The diameter of the outer tube is relatively uniform throughout, while that of the inner, in general somewhat narrower, becomes dilated in the immediate vicinity of an opening through which the canals of the tubes communicate with each other. The contiguous portions of the walls of the two tubes are in close proximity to each other throughout the greater part of their course, and are fused near the common opening.

"The walls are composed of mucous, muscular, and peritoneal coats. The mucous membrane of the outer tube shows slightly projecting transverse folds in the vicinity of the opening, while that of the inner tube is relatively smooth. Villi and crypts are present in both.

"The opening between the tubes is rounded, sharply defined, one third of an inch in diameter, and appears to be covered with mucous membrane. The canal of the inner tube is contracted in the immediate vicinity of the opening, and its wall at this point is thickened and fibrous."

ILLUSTRATION NO. 7.

Warren Museum specimen 7732, transilluminated. Transillumination is suggested as a useful procedure during operation as the relations are difficult to demonstrate.

ly this is of importance as resection of the reduplication necessitates resection of the adjacent intestine whose blood supply is sacrificed by the resection of the reduplication. Drennen[7] has stressed this point in connection with the ileocecal cysts not Meckel's in type.

A second important technical consideration is the requirement of meticulous palpation and inspection of the entire intestinal tract and its mesentery. It is difficult to demonstrate these anomalies at operation. The suggestion is made that transillumination of the mesentery will be helpful. In our case No. 1 the anomaly was not recognized completely at the initial operation but was at the second. At this time the operator quite easily followed the intramesenteric course of the diverticulum but nearby spectators could see it indistinctly. In case No. 2 the character of the anomaly was not recognized at operation but in No. 3 it was recognized at once probably because of the operator's experience in case No. 1. Wright[10] recognized his case at operation. It was in relation with the colon.

Consideration of these three cases adds weight to the opinion expressed in connection with a study of experience with Meckel's diverticulum[5], i.e., that infants and children presenting a long history of symptoms referable to the abdomen are entitled to and should receive a gentle but meticulously thorough exploration of the abdominal viscera when other diagnostic methods prove inconclusive. This is all the more true if melena is a symptom. There is every reason to believe that resection of such anomalies is feasible and will relieve symptoms if an opportunity is afforded to perform a deliberate laparotomy at a time when the patient is in good condition.

SUMMARY

Three additional instances of giant diverticulum or reduplication of a segment of the intestinal tract are reported.

The theories explaining the development of these anomalies are summarized.

The technical problems involved because of the blood supply and the difficulty of demonstrating the anomaly are discussed.

The three cases reported confirm our belief that exploratory laparotomy, at a time when the patient is in good condition, is indicated for those infants and children who present a long history of undiagnosed abdominal symptoms.

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GIANT DIVERTICULA AND REDUPLICATIONS

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Since this paper was prepared, Dr. D. E. Robertson of Toronto has operated on a similar case. I am indebted to him for permission to quote from his letter.

"Yesterday I examined a girl, twelve years of age, who has a large intestine which has two lumens. I do not know where the two lumens begin at the central end, but suspect they begin in the caecum. They are separated throughout from the splenic flexure to the distal end at all events. The one opens through a normal anus and functions normally, the other opens with a minute opening in the vagina and this was the cause of an impaction of faeces which occurred in it and made a large mass which extended half way up the ascending colon. I did an anastomosis just inside the anus between the two recta, and they each had a normal musculature and muscle coat. I was very disappointed to find that this case did not have two appendices as it seemed to me to have two caeca."

DIABETES INSIPIDUS*

Treatment With Posterior Lobe Pituitary Powder Intranasally

BY ALEXANDER MARBLE, M.D.†

ALTHOUGH diabetes insipidus is an uncommon condition, the usual effectiveness of treatment with posterior lobe pituitary extract is universally recognized. Since Blumgart's[1] studies, the convenient intranasal route of administration has been widely used to supplant subcutaneous injections. Most clinicians, however, in using this method have employed liquid pituitary preparations either as a spray or on cotton pledgets inserted into the nose; pituitary jelly has also been used. It has not been generally appreciated that the intranasal insufflation of pituitary *powder* is equally, if not more, convenient and effective[2] and is far less expen-

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sive than other forms of therapy. Recent reports on this subject have been made by Smith[3] (whose paper stimulated us to use pituitary powder), by Canelo and Lisser[4] and by Adlersberg[5]. The purpose of the present note is to record briefly our own experience.

Our series includes four cases. In three of these the condition is idiopathic in type; in the fourth a brain tumor (glioma of the optic chiasm) was demonstrated at operation in December, 1927.

Case 1—Miss R. S., was first seen on September 13, 1933 at the age of eight years. She had always been a nervous child. She had had no illnesses except pertussis at the age of five and an attack of tonsillitis in the spring of 1933. Polyuria and polydipsia had been noted since about August 1, 1933. Physical examination showed her to be pale and undernourished; the tonsils were moderately enlarged and scarred. Upon examination of the urine a specific gravity of 1.001 was noted; the tests for albumin, sugar, bile, and diacetic acid were negative. Examination of the blood showed slight anemia, the fasting blood sugar was 0.07 per cent, nonprotein nitrogen, 25 mgm. per cent and plasma cholesterol, 197 mg. per cent. Ophthalmoscopic examination and roentgenograms of the skull gave normal findings.

At the New England Deaconess Hospital in September 1933, the antidiuretic effectiveness of pituitary extract given subcutaneously was quickly demonstrated and treatment by the nasal route attempted. The liquid extract was introduced into the nostrils on small cotton pledgets, but in our patient this procedure caused considerable discomfort and irritation. Consequently administration by means of a nasal spray was used with good results. The parents were instructed to use at home the nasal spray supplemented by subcutaneous injections when nasal irritation or nose colds made the intranasal route unsatisfactory.

Treatment with posterior lobe powder was begun during a two-day hospital stay in February, 1935. Unfortunately the time was too short to permit desirable studies. During the first day no specific medication was given; during the second, approximately 200 mgm. of pituitary powder was blown into the nose in four doses. Despite the short period of observation and despite a coryza with nasal discharge, the urinary volume during the second twenty-four hour period was kept down to 3090 cc. as compared with an output of 5310 cc. in the previous twenty-four hour period when no medication was given. The comparative results are shown in table 1.

TABLE 1

Effect of Posterior Lobe Pituitary Powder Intranasally

Case No. 1, Miss R. S.

1935	Fluid Intake cc.	Urine Output cc.	Specific Medication
February 1-2	4590	5310	None
2-3	3450	3090	Approximately 200 mgm. Pituitary powder intranasally in 4 doses.

Letters received from the parents since hospital discharge indicate that treatment by insufflation of powder has been much more convenient, though perhaps not quite so effective, than by subcutaneous injection. They find that the effectiveness is definitely reduced in the presence of a head cold with nasal discharge. During the two months from June 19 to August 20, 1935, the cost of treatment with pituitary powder has averaged less than five cents a day.

Case 2—Mr. D. D., was sixteen years of age when he first came for treatment on January 5, 1934. Thirst and polyuria had been present since August, 1933: the onset of symptoms had apparently been gradual. On the advice of his home physician, pituitary extract had been taken with a good antidiuretic effect both subcutaneously and intranasally in the form of a spray. For three weeks, however, he had suffered so much from irritation of the nasal mucosa that he dreaded to use the pituitrin. Roentgenograms of the skull taken elsewhere on November 20, 1933 had shown a normal sella turcica. Blood and urine studies showed no abnormalities other than the low urinary concentration (specific gravity 1.004). Examination, including ophthalmoscopic study, showed him to be in good general physical condition.

The patient was not admitted to the hospital. He was advised to try a nasal jelly containing the pituitary principle and to use subcutaneous injections of liquid pituitary extract at such times as intranasal medication was uncomfortable.

When seen on November 2, 1934 he was found to be in good general physical condition. He had soon given up the nasal jelly since he could not secure satisfactory results with its use. He had come to rely chiefly on the intranasal spraying of posterior pituitary extract with at least five applications a day.

Following this visit we suggested that he try the intranasal insufflation of posterior lobe powder. On January 21, 1935 he wrote, "I started using the powder you had sent to me from the Deaconess Hospital Dec. 1st and it lasted me until Jan. 10th, taking it four times a day. I have found it much more effective than the liquid and would much rather use it. There were only two or three days out of this time that I did not use it as I had a very bad head cold and it did not seem to have any effect. There is certainly a great difference in the price between the powder and the liquid, which is fortunate for us."

Again on April 4, 1935 his mother wrote: "The bottle of powder that we got from our local druggist . . . lasted from January 10th to March 1st . . . Mornings it will last about three to four hours, afternoons from four to five hours. He takes about one sniff up each nostril four times a day, that is, mornings, noon, after supper and on going to bed. The powder seems much more effective than the liquid and, of course, there is a decided difference in the cost. For convenience there does not seem to be much difference."

A four gram bottle of powder then lasts this patient from forty to fifty days. Such a bottle is sold at retail from $3.75 to $4.00. Hence the medication in this form costs him less than ten cents a day as opposed to thirty-five to seventy cents a day using the liquid preparation as a spray or subcutaneously.

Case 3—Mrs. L. H., forty-four years of age, was first seen on March 25, 1935. For twelve years she had suffered from excessive thirst and polyuria. Except for measles, mumps, and whooping cough in childhood and jaundice at the age of seventeen, she had had no noteworthy illnesses. She had five sons living and well. Eleven years before she had

been studied at the Massachusetts General Hospital where treatment with pituitary extract (intranasal spray) had been used with success. The patient had had difficulty in getting the drug in her home town, however, so that for the most of the ten years she had received no medication, nor had she sought medical advice. She stated that at times she had voided as much as four gallons of urine a day. Although now she awakened only once or twice a night to urinate, in the past she had at times arisen as many as twelve times. She regularly was drinking two quarts of water during the night.

Physical examination showed her to be in good condition except for acne rosacea, slightly enlarged tonsils, hyperactive patellar reflexes, and varicose veins of the lower legs. Studies of the blood and urine together with a roentgenogram of the skull gave essentially normal findings, except for the large volume and low specific gravity of the urine. The basal metabolic rate was —3.

Following a control period during which no specific medication was given, pituitary extract was administered by intranasal insufflation. The results are shown in table 2.

TABLE 2

EFFECT OF POSTERIOR LOBE PITUITARY POWDER INTRANASALLY

Case No. 3, Mrs. L. H.

Date 1935	Fluid Intake	Urinary Volume	Remarks
March 26-27	3960	4380	No specific medication.
27-28	4200	3630	" " "
28-29	3030	3660	" " "
29-30	2190	1230	Pituitary powder, approximately 200 mgm., intranasally in 4 doses
30-31	930	1080	"

The patient was allowed to go home on a varied, low-salt diet and instructed to use the pituitary powder as often as necessary to control her symptoms. On April 28, 1935, she wrote: "I am getting along fine with three doses a day and one capsule (200 mgm.) will go three days. When I feel that I must have more I take it. I never have to get up nights and I feel better in every way."

Again on August 13, 1935 she wrote, "I cannot begin to tell you how much more comfortable I have been this summer. Even the hottest days I did not care for as much water as others. I have not had to get up at night more than three times since I came home (a period of 4½ months). I only have to take the powder 3 times a day." She further stated that the first bottle of four grams lasted from April 1 to July 10, or one hundred days; thus the actual cost was about four cents a day.

CASE 4—Miss H. E. L., was ten years of age when first seen on June 7, 1926. The diagnosis of diabetes insipidus had been made a year before in the Canal Zone because of extreme polydipsia and polyuria, with the urinary volume ranging between 3,500 and 5,500 cc. per twenty-four hours and a urinary specific gravity as low as 1.001. Pituitary extract had been given subcutaneously.

In Boston in 1926 the findings were essentially the same. Ophthalmoscopic examination and roentgenograms of the skull gave no evidence of brain tumor, nor was this diagnosis thought likely by neurological consultants. She was not seen again until November, 1927 when she was brought back for observation because of total blindness which was said to have come on in the course of a few days. Ophthalmoscopic examination then showed bilateral optic atrophy. She was transferred to the Peter Bent Brigham Hospital where on December 12, 1927 a right transfrontal exploration was carried out by Dr. Harvey Cushing and a biopsy of a tumor (glioma of the chiasm) performed. Following this, four irradiations of the skull were given at intervals up to March, 1928.

The operation and x-ray treatments had relatively little immediate effect upon the polyuria and polydipsia. At the Peter Bent Brigham Hospital in December, 1927 the urinary output on three successive days had been 4100, 3000, and 3300 cc. with fluid intakes of 6100, 4000, and 4800 cc. respectively. During a second stay in the hospital in March, 1928 the urinary output was 4200 and 5000 cc. on two successive days with fluid intakes of 5400 and 4200 cc. respectively. In late years, however, there has seemed to be some lessening of the severity of symptoms, and except for the blindness, she has been well. Physical examination has been essentially negative except as regards the eyes.

At periodic office visits made since December, 1931 the specific gravity of the urine has varied from 1.002 to 1.005 and the volumes of a *single specimen* has been as great as 940, 1,000, and 1,225 cc. Since December, 1931 until recently the patient had not taken pituitary extract subcutaneously because the total blindness made self-medication difficult and because she had adjusted herself to the polydipsia and polyuria. She regularly got up two or three times a night to void large quantities of urine.

In April, 1935, the use of pituitary powder intranasally was suggested. The patient has used it more or less regularly since, giving it to herself at bedtime (none during the day) by intranasal insufflation. At first she found the powder irritating to the nose and complained of a choking sensation after its use, but this no longer bothers her. On August 12, 1935 her mother stated that with the single dose at bedtime the patient was able to sleep through the night (until 6 A.M.) comfortably without arising because of thirst or desire to void.

COMMENTS

Results with the intranasal use of posterior lobe powder in the above cases have obviously been highly satisfactory. In the first place, the mode of administration is much more convenient and less painful than the injection of pituitary extract subcutaneously. It is possibly less irritating than liquid pituitary extract applied on cotton pledgets and just as convenient as the administration of the liquid by intranasal spray. Secondly, there is a great saving in expense over other forms of treatment. The cost of pituitary powder averages from four to ten cents a day as compared with at least thirty-five to seventy cents a day for liquid pituitary extract (in preparations ordinarily available) given intranasally or subcutaneously.

One of our patients has tried with success the use of the powder as snuff as was also used by the patient of Canelo and Lisser[4]. Case 2, Mr. D. D., takes a pinch of the powder between the thumb and forefinger, inserts it into one of the nostrils and by sniffing draws the powder into the upper part of the nose.

As aids in treatment it is helpful to advise

patients to limit the amount of salt in their diet, to avoid stimulants as tea and coffee and to restrict fluids after 6 or 8 P.M. in order to help insure a comfortable night. We have not used amidopyrine (pyramidon).

SUMMARY

In four cases of diabetes insipidus the intranasal insufflation of posterior lobe pituitary powder has been used with success. The convenience and lower cost of this mode of administration are emphasized.

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A DEPLORABLE DEVELOPMENT IN THE ECONOMICS OF RADIATION THERAPY

BY FRANK EDWARD WHEATLEY, M.D.*

THIS paper was inspired by the rather insistent request of a physician that I treat a superficial growth on his patient's ear by deep therapy. As this was not the first indication I have had that there is a general misunderstanding in regard to the value of various types of x-radiation, I believe there is need for a general reconsideration of this subject. The reason for the confusion is easy to understand when we consider the recent developments in radiation technique. Up to about thirteen years ago, the radiologist's armamentarium consisted of radium, and x-rays produced by voltages below 140,000. Radiation therapy was an accepted method of treatment in a large number of pathological conditions, but our early hopes that radiation would prove a cure for internal malignancies were disappointed.

About that time rumors came from Germany that they had developed x-ray tubes and apparatus operating at 200,000 or more volts and consequently capable of delivering more penetrating x-rays. Soon our medical literature was flooded with dramatic case reports of patients apparently hopelessly infected with cancer who had been "cured" by massive doses of penetrating x-rays. American radiologists were not slow to follow this lead and American manufacturers developed the necessary apparatus. Medical literature was further enriched by sanguine statements of the men who were pioneers in this work. The magic term "Deep Therapy" was evolved and we had high hopes that science had at last discovered a most formidable weapon against the cancer scourge. Soon, however, reports from Germany indicated that many of the early cases treated by massive doses of deep therapy were dead, not from the disease but from the effects of the radiation. As time went on it was realized that while deep therapy was a decided advance in the treatment of internal cancer, it was capable of producing very serious consequences, so that gradually the practice of applying massive doses was discarded and smaller doses were adopted.

Recently, following the method of Coutard in the relatively successful treatment of laryngeal carcinoma, some radiologists are using a large number (20-40) of small doses of penetrating rays in the treatment of many other unrelated conditions. The total dosage given is much greater than heretofore thought safe. It may be that the method will prove to be an answer to the problem of the treatment of malignancy, but the returns are not in, and time will be the final arbiter. Meanwhile, the economic aspect of the method would tend to limit its use in all except the more desperate cases.

Laboratory and clinical experience have shown that the beneficial effect of radiation is due to that portion of the beam that is absorbed in the tissue under treatment, so that extreme penetration is probably of advantage only for the purpose of reaching a deep-seated lesion. In addition, it is believed by most authorities that the therapeutic action of radiation is not a function of its wave length, so that there is no particular difference between the effect of deep therapy or short-wave x-rays, and that of x-rays produced at moderate voltages, provided only that the intensity of the ray in the tissue under treatment is the same.

At this point it may be well to explain that when we speak of deep therapy, we are speaking of x-rays produced by voltages of 200,000 or more and having a wave length of about .15 or less angstrom units, and when we speak of moderate voltage x-rays we are speaking of those produced by voltages up to 140,000 and having wave lengths of .23 to .30 angstrom units. These wave lengths are those that emerge from suitable filters. When we come to treat a patient with the short-wave therapy, a term which I will substitute for the term "deep therapy", we find that at depths of four inches the dosage, depending on the portal, may be about 35 per cent of that at the skin surface. In contrast to this is the fact that the dosage with moderate-wave length with the same por-

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tal at four inches depth is approximately 20 to 25 per cent that at the skin surface. The significance of these facts is that with short-wave therapy we get about 1/3, and with moderate-wave therapy about 1/5 of our incident beam, to reach the depth of four inches. If the depth of the disease is less, the difference is less and with lesions in or near the skin, great penetration is not desirable. By suitable cross firing we can accomplish practically the same result with either wave length but, of course, the short-wave therapy accomplishes the result more satisfactorily in the deeper lesions.

As a practical matter, however, a large percentage of lesions requiring radiation therapy do not call for intensive doses of penetrating rays, and can be handled equally well by moderate-wave therapy. As a proof of this statement, it is interesting to review the early literature of x-ray therapy. Dr. F. H. Williams of Boston, in his book "The Roentgen Rays in Medicine and Surgery" 1901, reviews the current literature. Freund in 1897, two years after the discovery by Roentgen, treated hypertrichosis successfully with twenty hours' exposure, producing no other skin reaction. The length of exposure shows the feeble ray available at that time. Schiff treated lupus successfully in the same year. Kummell in 1898 treated lupus with two treatments of fifteen minutes each per day for two months, when the lesions were healed. Williams in 1900 was enthusiastic about the use of x-rays in eczema, sycosis, favus, and acne. In 1901 he reported success in treating epidermoid cancer of the lip (biopsy done by Dr. Mallory) with submaxillary gland involvement, using in all about two hours' exposure. He relates several other successful cases all of which were studied microscopically by Drs. Mallory, Wright, and Councilman. Dr. Mallory noted, in a biopsy made after treatment, that "the reaction on the part of the normal tissue was surprisingly slight" and Dr. Williams stated, "It would seem that the x-rays have a selecting action." He sums up his experience in the use of x-rays in external new growths as follows:

1. Treatment is adapted to external new growths which have not great depth, though they may cover much surface.
2. The treatment causes no pain.
3. No delay because of operation.
4. Pain and odor are relieved.
5. Healing follows without causing burn.
6. Cosmetic results excellent.
7. Treatment carried on without patient giving up work.
8. Operation may be done on larger growths, followed by x-rays.

He classified new growth cases coming to the Boston City Hospital for several years and found out of a total of 635, 318 were internal while 317 were external and amenable to x-ray. Certainly, if Williams in 1901 with the inadequate apparatus then available, was getting good results, and believed from his experience that about one-half the cancer cases at the Boston City Hospital could be helped with x-ray, it is certain that with even the poorest equipment we now have, we can do considerably better.

The literature up to the advent of short-wave apparatus abounded with reports of successful treatment of all sorts of lesions with low or moderate voltage radiation. Modern literature, which is based upon experiences both with short-wave therapy and moderate-wave therapy, has many references in which moderate-wave therapy is preferred to short-wave therapy, although some authors believe that short-wave therapy is superior.

For example: Leddy[1] of the Mayo Clinic, "One purpose of this paper is to validate the exclusion of high voltage in inoperable carcinoma of the breast." He advocates the use of 130,000 volts maximum in inoperable carcinoma of the breast where no deep metastases, or bone metastases exist. Lauritsen of the Institute of California[2], "It is reasonable then to conclude, as Meyer does, that there is no advantage and probably even harm in using hard (short-wave) roentgen rays or radium rays for superficial and intermedially located lesions." Portmann[3], Cleveland Clinic, Cleveland, Ohio says, "Therefore, I am of the opinion that in the postoperative treatment of mammary carcinoma, the radiation should, so far as possible, be limited to the chest wall by a low voltage technique (140,000 volts maximum). Dosage over the chest wall should be modified to prevent damage to the organs of the chest and the elements of the blood." Grier[4] of Pittsburgh states, "I believe that the effect on cancer cells produced by Roentgen rays of different wave lengths (produced by different voltages) is not greatly different for the same dosage." Pfahler[5] uses 130,000 volts maximum in treatment of cervical adenitis. Groover and Christie[6] in a paper on roentgen treatment of hyperthyroidism use 140,000 maximum. Hirsch and Holzknecht[7] advise the use of deep therapy only in internal carcinoma, glioma, inoperable sarcoma, mediastinal tumor, cerebral tumors, hypophyseal tumors, hypernephroma, and syringomyelia; on all other lesions amenable to radiation including carcinoma of the skin, they advocate voltages less than 150,000 maximum. Widmann[8], Philadelphia General Hospital, discussing carcinoma of the lip states, "The effects of different qualities of radium and Roentgen rays have been observed to be equally good."

The apparatus necessary for the shorter wave length x-ray is highly expensive, the maintenance cost is great, and the exposure time is often several times that used with moderate wave

length x-rays due to the heavy filtration necessary. All these factors add to the expense.

A limitation of all x-ray therapy is that resulting from radiation sickness, so that it is impossible to utilize full dosages without producing serious discomfort to the patient. In many institutions using short-wave therapy, divided doses are given, the maximum being twenty-five per cent of a full dose, partly to avoid radiation sickness. It is my observation that this untoward reaction to radiation is considerably more likely to occur when short-wave rays are used than when equal doses of moderate-wave rays are employed, especially when the treatment is directed to the abdomen. This complication results in the necessity of giving a series of small doses and when this is done the short-wave apparatus costs mount accordingly.

As an illustration of this point, I recently treated, with moderate-voltage, a patient for menorrhagia, completing in one dose a series given elsewhere by deep therapy. She had received six treatments at a cost she could ill afford, and was agreeably surprised to learn that the proportionate cost of moderate voltage therapy was considerably lower. In my experience, the average menorrhagia case can be handled equally well with moderate-wave therapy at an expense of about one-half that of deep therapy.

I do not wish this paper to be interpreted as antagonistic to short-wave therapy which has a distinct field, and is a great advance over previous radiation in certain limited conditions. I do, however, want to impress the fact that there is a misconception in the minds of many physicians who believe that short-wave therapy is superior to any other radiation in every case—a misunderstanding that results in the deplorable situation that an unnecessary economic burden is placed upon the unfortunate patient. I believe that in these days where the "high cost of medical care" is a public issue, the physician should not prescribe short-wave or "deep" therapy, but should refer his patient to the radiologist, and let him determine the type of treatment that should be given, taking into account, not only the pathological condition, but also all other factors which should influence the choice of the type of treatment to be given.

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NEW ENGLAND SURGICAL SOCIETY

RECONSTRUCTION OF THE VAGINA FROM A PORTION OF THE SIGMOID*

Report of a Case

BY HERMAN C. PITTS, M.D.†

MRS. J. C., twenty-nine years old, was sent to me September, 1930 by Dr. Sullivan of Newport complaining that "water comes away all the time". Her story was that she had been delivered by forceps of a dead baby four years before while still living in the Cape de Verde Islands. Since then she had had another pregnancy terminated successfully by Caesarian section.

Examination showed a deep healed laceration of the tissues to the right of the urethra and involving the urethra to a considerable extent. The perineum was badly lacerated. The caliber of the vagina was small—would admit the little finger only as far as the cervix. This contraction was due to masses of scar tissue, evidently following trauma from forceps.

I felt that her incontinence could be helped by some plastic work on the urethra and that at the same time the caliber of the vagina could be enlarged.

The operation was done October 7, 1930. The result on the urethra was excellent. The patient reported in May, 1931, that she had good control. The vagina, however, was not so satisfactory. Sexual intercourse was impossible. So on May 12, 1931 I tried again—this time turning in a flap from the side of the vulva on the right. The result, as before, was very disappointing. In October, 1933, the vagina was little better than a cord of scar tissue. Both she and her husband were very insistent that something be done—the condition present was ruining their family life.

I talked to them at that time about making a new vagina from the bowel but did not encourage the undertaking.

Nothing more was heard from the patient until June, 1934, when she came in declaring she was ready to do anything to end the present uncomfortable situation.

June 13, 1934. Operation. Rhode Island Hospital.

*Read by title at the Annual Meeting of the New England Surgical Society, at Manchester, N. H., September 28, 1935.

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Under ether anesthesia the vaginal mucosa including all scar tissue was removed from the introitus to the cervix. The abdomen was opened—a complete hysterectomy done and the left tube and ovary removed. An attempt was made to find a loop of ileum long enough to serve the purpose, but the mesentery proved too short. Failing this, a ten inch segment of sigmoid was isolated and a lateral anastomosis of the cut ends of the bowel done above to restore its continuity. Then the isolated segment was folded on itself and carried down into the prepared vaginal cavity to the introitus. The peritoneum was drawn over the operative site above, the abdomen closed and patient again changed to the lithotomy position. The folded end of the bowel presenting at the introitus was opened and the edges stitched to the raw edges of the vaginal entrance. This left a double-barreled passage extending upward about five inches. The two canals were packed with iodoform gauze.

The patient made a satisfactory recovery. When I saw her July 10, 1934 there was some discharge and the entrance to the new vagina had contracted a little. The median septum was very apparent and acted as an obstruction.

In October, 1934, she was sent to the hospital again and clamps were applied to the septum in the new vagina. The pressure of course caused sloughing as far as the clamps reached, so that when she left the hospital there was a single canal for about four inches. At the time the clamps were put on, the constricting band surrounding the vaginal entrance was cut with a tenotomy knife.

I saw this patient last, May 24, 1935 not quite a year after the new vagina had been made. Intercourse was still painful. The tube was well open and certainly seemed perfectly capable of fulfilling the function for which it was intended. The remains of the septum high up should be gotten rid of and I mean to do something for this at a later date. At the time of this last examination, the lining of the vagina was still soft and velvety like that of newly opened intestine. I had hoped it would become tougher and more like vaginal mucosa.

In reviewing this case, I have regretted that I used a loop of sigmoid and not a single section, but at the time the bowel was so contracted that I thought a single tube would not be large enough.

DR. WILLIAM BEAUMONT*

BY WALTER R. STEINER, M.D.†

ON June 1st of this year, the citizens of the town of Lebanon, Connecticut, united with the Beaumont Medical Club to dedicate, at Lebanon, the Beaumont Memorial Highway. At that time the memorial address, with Professor Russell H. Chittenden presiding, was given by Dr. Harvey Cushing of New Haven. His lucidity of expression and charm of style will cause that address to be long remembered. On that occasion also our Governor, the Honorable Wilbur L. Cross, and Lieut.-Col. Robert H. Duenner of the United States Army spoke upon Beaumont. The wealth of material then exhibited upon him naturally causes me some embarrassment and would force me to decline this honor, were it not for the fact that I have in previous years spoken upon him in Plattsburgh, Chicago, Philadelphia and New Haven, so that I hope I may be able to gather together now some references to him which had not been mentioned, for lack of time, one month ago. Especially would I like to dwell somewhat upon the letters which he wrote home to his family here in Lebanon.

He was born in Lebanon on November 21, 1785, being the son of Samuel and Lucretia (Abel) Beaumont. He was a farmer's boy, was fifth in descent from William Beaumont who came to Massachusetts in 1635 and migrated with John Winthrop, Jr., to Connecticut, where he appears at Saybrook in 1640. Courage was one of Beaumont's prominent characteristics which caused him, at one time, on a dare to stand nearer a cannon that was being fired than any of his playmates. It probably was an important factor in the permanent defective hearing which later developed. After being educated at the village school, he stayed home to help his father till the fields of their farm until he had arrived at man's estate, when seeking adventure, he set out from home journeying northward with a horse, a cutter, a barrel of hard cider and $100 of hard-earned money. Reaching Champlain in the spring of 1807 he found favor in the eyes of the people there, was given the job of school teacher, tended store, and in his spare time, whenever there was any, began the study of medicine, borrowing books from the library of Dr. Seth Pomeroy of Burlington. In one of his letters home on December 29, 1807, we learn he is now upon the last half of the quarter term and his school consisted of sixty and odd scholars who were daily increasing. He thought the prospects there "more encouraging than they were in Connecticut", and wished to remain there unless his return would contribute to his parents' "ease, happiness and satisfaction". Later we learn on March 8, 1808, he was in his fifth quarter in teaching school. An uncle living in Champlain, being a strong Federalist called him, on account of his Jeffersonian principles, "the imp of his father". These strong Democratic tendencies are exhibited in a number of letters, in one of which he writes: "Since the election (or Freeman's meetings as they are called in Connecticut) the Feds stand aghast, their eyes distended with wrath and indignation, their countenances disfigured with mingled

*An address delivered at Village Hill on July 1, 1935, at the opening of the Beaumont Highway. Village Hill is situated on the Beaumont Highway, half way between Willimantic and Lebanon.

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expressions of shame, chagrin and disappointment." Later he thus responds to a taunt of Luther Newcomb of Lebanon that he had become a Federalist: "Sooner might they move the everlasting hills than to bribe my integrity, waver my faith, shake my belief or divert my course from the polar star of Republicanism while reason holds her empire over the province of my intellect."

He seems to have gone to Lebanon in the summer of 1808, but had returned to Champlain by the fall. In January of the following year we learn from another letter that he had between sixty-five and seventy scholars to look after so he was "in constant employment with scarce time to unbend his mind at night". In a letter to his brother Abel at this time he writes him the following advice in the high flown language of that period: "let virtue, truth and honesty be your planetary guide, temperance, justice, fortitude and prudence your cardinal points, faith, hope and charity your horizon, philanthropy, benevolence, friendship and philosophy your atmosphere and the elements of life will be smooth, transparent and pleasant; gently gliding over your imagination like the eastern morning breeze across the swelling field of wheat." In another letter on April 3, 1810, we are informed that he had closed his pedagogical career and was then pursuing the study of medicine under Dr. Benjamin Chandler at St. Albans. After two years spent thus, he was granted a license to practise medicine by the Third Medical Society of the State of Vermont and some months later entered the Army as Surgeon's-Mate. In the War of 1812 he was at the capture of York and finally in the battle of Plattsburgh, where he was highly complimented for his bravery under fire.

Soon after the War he resigned from the Army and commenced the practice of his profession in Plattsburgh, keeping a store at the same time along with two physicians successively until he reëntered the Army as Post-Surgeon in 1819 when his practice was left to his cousin, Samuel Beaumont. During this period of his practice in Plattsburgh, the following amusing advertisement appeared in the Republican, which was the town's newspaper:

> "The person who took a small glass Sand Box from the office of Doct. Beaumont is requested to return it, and save their reputation as it is well ascertained who the offender is."

Unfortunately, we are not subsequently informed if the thief saved his reputation.

Three years later a great opportunity came to him at Fort Mackinac, for a young French Canadian, Alexis St. Martin, was shot in the stomach at close range in the store of the American Fur Company. Beaumont was called to attend him, and, fortunately, under Beaumont's unremitting care, the patient was saved, but recovered with a permanent hole in his stomach. Through this hole in St. Martin's stomach, Beaumont was able to make four series of experiments upon the physiology of digestion, but these were only accomplished under considerable difficulty for the patient was an elusive, drunken old reprobate. Finally, in 1833, Beaumont published the results of these four series of experiments in a book entitled, "Experiments and Observations on the Gastric Juice and the Physiology of Digestion." It was published by Frederick P. Allen of Plattsburgh and reissued the following year by Lilly Wait and Company in Boston. Fourteen years later his cousin, Samuel Beaumont, edited a second edition of this book which consisted merely of many minor corrections. Later an English and German edition appeared, and still later, when the International Congress of Physiologists met in Boston in 1929, it was again republished by the American committee as they considered it represented America's foremost contribution to physiology. A copy at that time was given to each of the delegates along with a medal on which the profile of Beaumont was depicted. The book in its first edition was sold at $2.00 a copy, but now has increased in value so that it is worth from $50.00 upwards. The closest research of modern times has added only a little to the work done by him as represented in this book.

Finally, in 1839, Beaumont resigned from the Army and entered into private practice in St. Louis, where in his last thirteen years he enjoyed a most extensive and lucrative private practice. His letters home, which still survive, are addressed mostly to his parents or specifically to his father. They all show an intense devotion to his family. In 1814, he writes a tender letter of sympathy to his mother on account of his father's death, and advises his brother Abel to look after the farm, thinking with a little more experience, the advice of others and good health he should be competent to look after it. He seems to have been teaching school at that time. In 1815 he writes to his brother Abel: "Should I get my pay soon and conclude not to remain in service I shall be in Connecticut before many months." In a letter he wrote Abel in regard to quitting his teaching to superintend and carry on the old farm in Lebanon he writes: "I am convinced that I shall, before many years, exchange my present profession of physics and surgery for that of agriculture which I am very fond of and grow more and more so as I advance in life." Subsequently, Abel seems to have studied medicine and to have gone to New York to practice, where he died a few years later. On April 22, 1835, Beaumont writes to his brothers and sisters from Plattsburgh that he expects to be permanently located in St. Louis at least for several years, and adds: "if you and the girls

should feel a mutual migratory spirit and your circumstances and situations will warrant a removal from your native soil to be transplanted in the far west, I will be looking out for you." In March, 1853, he fell on some ice-covered stone steps when returning home from a professional call, and, although his injuries at the time seemed slight, he never entirely recovered from them. Later he developed a carbuncle on his neck, and died on April 25, 1853. His remains rest in the beautiful Bellefontaine Cemetery in St. Louis, beside those of his wife, whom he married as a widow—Mrs. Deborah Green—in 1821. She survived him seventeen years.

Dr. Samuel D. Gross, a distinguished surgeon in Philadelphia, has given us the following sketch of Beaumont in his reminiscences. "I found Dr. Beaumont an agreeable gentleman, sauve and interesting in conversation, with great enthusiasm for his profession, and admiration for its successful cultivators. The only thing that marred the pleasure of this and other interviews was his deafness, which compelled him to use an ear-trumpet, and the listener to raise his voice to a fatiguing pitch. Dr. Beaumont was a man of small stature and delicate frame, with a darkish, sallow complexion, imparting to him a somewhat unhealthy appearance. He was at the time fifty-seven years of age, and looked old. An active life, attended with the many exposures incident to an army career, had made serious inroads upon a constitution never strong and robust."

Beaumont's genius surmounted his lack of a college education, his lack of a medical school training, his lack of a hospital experience, and gave to the world a name which will be long remembered in medical annals, for he blazed a path in the physiology of digestion which has now become a broad highway. He really belongs to the world, for his fame from these achievements in the physiology of digestion has made him a world known figure, but we in Connecticut more especially claim him, as this is the land of his birth. You have set at naught the old adage that a prophet is not without honor save in his own country, by perpetuating Beaumont's memory in this highway. It will cause his name to be made known here even to coming generations.

HEALTH PROTECTION EXPENDITURE

Health protection for the public of the United States is disposed of with the expenditure of only 50 cents annually per person in tax money, compared with the annual average expenditure of $4.52 per person for police protection and $3.32 per person for fire protection.

This is but one item in a pamphlet, "Health Facts," just off the press, published by The National Health Council as part of the material for the Health Today and Tomorrow campaign, recently launched and planned for the winter and spring months. Already more than 400 cities have enlisted in the campaign, through their state or city health officers, who are taking the initiative in most of those localities. The climax of the campaign is to be, in general, an open Town Meeting held after a thorough community-wide health inquiry has been made to discover public health needs in that locality.

Most of the statistics contained in "Health Facts" furnish a basis of comparison of local health conditions with immediately attainable health goals. Among other striking statements made in this pamphlet, the following are a few which show the need for greater appropriations for community health work, from both public and private sources:

We are graduating as many persons from the community into nervous and mental hospitals as we are sending out into the community each year from our colleges and universities. More than fifty per cent of all hospital cases in this country are those of some form of mental illness. The present annual average of mental cases recovered or improved is about forty per cent.

Another statement: Relief funds make little appreciable addition to health services for the needy. Social Security Act appropriations, when they become available for public health work, will not be large enough to make up for the depression shrinkage in regular health department appropriations since 1929.

Under the heading, "What Voluntary Health Agencies Do," we read in this pamphlet that voluntary hospitals, with about half as many beds as government hospitals, accommodate about seventy per cent of the admissions in any one year.

Through health education campaigns financed privately the diphtheria case rate (in one urban campaign) was reduced from 197 for every 100,000 population, to twenty-four.

Forty-eight per cent of the nurses available for community services are paid from private funds. On the other hand, the public health nursing service is the largest single item among public health expenditures—about one-third to one-half of the tax funds for public health goes to pay for public health nurses. Yet the total number of nurses now serving the country amounts to only one-third of the number needed in communities. Public health nursing organizations have suffered a ten per cent reduction in income, while the volume of free service has had to be increased.

"Health Can Be Measured" and "Health Can Be Purchased" are headings of two other sections of the pamphlet. This is a limited edition, and it is already apparent that a second printing will be necessary. To cover the cost, a nominal charge is made of twenty cents for a single copy and fifteen cents a copy in lots of 100 or more, ordered from The National Health Council, 50 West 50th Street, New York City.

CASE RECORDS
of the
MASSACHUSETTS GENERAL HOSPITAL

ANTE MORTEM AND POST MORTEM RECORDS AS USED IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES

FOUNDED BY RICHARD C. CABOT, M.D.

TRACY B. MALLORY, M.D., *Editor*

CASE 21491

PRESENTATION OF CASE

A sixty year old unmarried white American female was admitted complaining of shortness of breath and a lump in the neck.

About ten months prior to admission the patient first noted that activities which she had previously carried on without difficulty now produced shortness of breath and fatigue. This gradually increased in severity so that climbing two flights of stairs forced her to rest because of breathlessness. When excited she had always had some fluttering palpitation, which had not increased during the present illness. Seven months before entry she noticed that her memory was becoming poor. She had occasional dizziness while standing and looking upward. Three months before admission she first noticed a swelling in her neck which became progressively larger. Shortly afterward her friends noticed that her voice was becoming hoarse, and when she swallowed food it "did not go down straight." Occasionally deglutition was accompanied by a tight dry feeling in her throat. There had been no weight loss.

One sister died of carcinoma, another of tuberculosis. One brother died of a probable general paresis. Her father died of cirrhosis of the liver, her mother of carcinoma of the skin.

Physical examination showed a well-developed and nourished elderly woman who appeared to be quite comfortable. The skin was warm and moist. The eyes were symmetrically prominent and there was definite lid lag. There was an asymmetrical nodular enlargement of the thyroid and a bruit was audible over the gland. There was slight tremor of the extended fingers. The heart was enlarged to the left. The sounds were regular and of good quality but there was a split first sound at the apex which was heard faintly at the aortic area. The systolic blood pressure vacillated between 170 and 205 but the diastolic remained constantly at about 110. The lungs were clear.

The temperature was 99.8°, the pulse 88. The respirations were 20.

Examination of the urine was negative except for 6 to 8 white blood cells per high power field. A urinary concentration test showed a specific gravity between 1.012 and 1.015. The blood showed a red cell count of 4,800,000, with a hemoglobin of 70 per cent. The white cell count was 5,500, 72 per cent polymorphonuclears. Stool examinations were negative. The nonprotein nitrogen of the blood was 32 milligrams per 100 cubic centimeters. An intravenous phenolsulphonephthalein test showed 40 per cent excretion of the dye in one hour. An initial basal metabolic rate was plus one. Subsequent tests ranged between minus 5 and minus 14, with a single reading of minus 22.

X-ray examination showed that the lung fields were clear. The diaphragm and heart shadows were normal. There was no substernal thyroid or tracheal compression.

Eight days after admission operation was performed.

DIFFERENTIAL DIAGNOSIS

DR. JACOB LERMAN: The first two symptoms, shortness of breath and a lump in the neck, immediately suggest a diagnosis. A person with a lump in his neck who is short of breath is more often than not thyrotoxic.

However, I do not see any mention here of any other toxic symptoms, i.e., their presence or absence, except weight loss. We must assume that they were sought and found to be absent. The prominent symptoms apparently were those of pressure,—difficulty in swallowing, and tight sensation in her throat.

There are, apparently, two members of the family who have had carcinoma. That would suggest a possibility that the lump in the neck might be malignant.

We place a good deal of emphasis on a warm moist skin in a differential diagnosis. In general a cold clammy skin will practically rule out hyperthyroidism from a clinical standpoint. A warm moist skin can only be said to be consistent with hyperthyroidism.

There are two very important physical findings suggesting the diagnosis of thyrotoxicosis. We have a goiter plus eye signs. No mention is made here of a stare. I feel that a stare is a very important eye sign, certainly as important as prominence or lid lag.

I should like to see more description of the thyroid. All we know is that it was a lumpy goiter but no mention is made of the consistency or the character of the gland. Consistency is very important in differential diagnosis and also gives one a clue as to the possibility of treatment. If this gland were particularly hard, we would suspect that she had had iodine medication previously. This would help us in diagnosis. A bruit is also very important in differential diagnosis here. In general one may say that almost ninety per cent of hyperthyroid

patients have a bruit. In some instances, where the diagnosis of hyperthyroidism is not made in spite of a bruit, the gland is found to be hyperplastic. Consequently we pay a good deal of attention to a bruit in a thyroid gland.

"The heart was enlarged to the left." That does not mean hypertrophy because percussion is not infrequently erroneous in toxic goiter. It is common for the examiner to overpercuss perhaps by two centimeters when the heart is overactive. I should not be surprised if the heart were found to be of normal size by x-ray.

Obviously there is some fixation of the specific gravity and that is consistent with an arteriosclerotic kidney.

"An intravenous phenolsulphonephthalein test showed 40 per cent excretion of the dye in one hour." Thus the assumption that we are dealing with an arteriosclerotic kidney is probably correct.

The initial basal metabolic rate was plus one. I am assuming that the examiner did not find any history of iodine treatment because that would change the entire picture. Up to the point where the metabolic rate is introduced, the history and physical examination seem to represent a clear cut picture of toxic goiter with some symptoms of pressure. A metabolism of plus one could be consistent with hyperthyroidism. We have seen several patients who have had metabolisms ranging between zero and plus ten with very few symptoms and signs except goiter who nevertheless made a characteristic response to iodine, proving that they had hyperthyroidism. I assume no iodine was given here. The unusual feature here is the spontaneous reduction of the metabolism to a low level. Even so I am forced to make a diagnosis of hyperthyroidism in the past in a patient whose thyroid probably underwent spontaneous involution. One might speak of it as an exhaustion phenomenon and thus account for the low metabolism.

In the presence of a bruit I shall predict that the surgeon found hyperplastic tissue. This has occurred on several occasions when we did not suspect it and the bruit was the only clue to it. I remember one patient in particular, a young girl who had a metabolism of minus twenty. We thought she had simple colloid goiter but the surgeon at operation found an obviously hyperplastic gland. The metabolism after operation varied little from the one before operation. It is possible for a hyperthyroid gland to undergo involutionary changes to the point of complete atrophy and exhaustion and produce myxedema. Recently we saw a case of this sort and Dr. Hurxthal believes he has seen six or eight cases of myxedema following hyperthyroidism. Consequently, we may suspect that this patient is on the road to myxedema.

X-ray Interpretation

Dr. George W. Holmes: These films are taken at seven foot distance, not during quiet breathing but at full inspiration and the heart shadow is somewhat smaller than during quiet breathing. I think it is fair to say it is within normal limits. There is nothing unusual in the lung fields. We might wish that the exposure was a little greater so that we could see the trachea in the anteroposterior view. In the lateral we see it more distinctly and certainly it is not narrowed unless we interpret this small indentation as narrowing. We can see the tumor mass in front of the trachea and there is some increase in the distance between the spine and the trachea, suggesting that the tumor extends completely around the trachea. In these films the tumor seems to be rather small and homogeneous, certainly one would not suspect it to be a particularly nodular tumor. The spine shows hypertrophic changes which are very common and have no bearing on the diagnosis.

Dr. J. H. Means: Would you say the distance between the posterior wall of the trachea and the posterior wall of the spine is about twice the normal thickness? I was looking at one on the ward this morning that looked about half the width of that.

Dr. Holmes: There must be considerable variation in the normal and it may be increased by rotation, I think it would be safer to say that it is greater than normal.

Differential Diagnosis Continued

Dr. Lerman: I think the clinical diagnosis is that of goiter, probably toxic in the past, without any clear cut toxicity at present. We may say it is a gland undergoing involution. But I shall predict that the pathologist will find hyperplasia in spite of that, merely on the basis of the presence of a bruit. There is hypertension and probably moderate arteriosclerotic heart and kidney disease.

Clinical Discussion

Dr. Means: I think when Dr. Mallory produces a case that seems to be somewhat obvious there is usually a joker in it somewhere. I think we have a right to know whether she did or did not get iodine because the reaction to it is important in diagnosis, as Dr. Lerman brought out. If she had had, for instance, a metabolic rate of minus five and got iodine and it dropped to minus twenty-two, I should say that was good evidence she probably had thyrotoxicosis. If the fall happened spontaneously it would put a different complexion on the problem.

Dr. Tracy B. Mallory: We certainly had no intention of being mysterious about it. She had none.

Dr. Means: That means that twenty-two is

a natural basal level and it is hard, therefore, to say she was thyrotoxic. I think Dr. Lerman is correct in saying she may have been in the past and now is on the road to myxedema. That would be a logical interpretation.

I have been trying to guess why the operation was done. Was it done because of pressure symptoms or because she was thyrotoxic? Was it done because they thought it would be good for her heart? Or because they believed the lesion was malignant? The chances are very strongly against its being malignancy if she had truly had Graves' disease, because they do not go together for some mysterious reason that we do not understand. I should think there was no strong indication for operation here on the basis of existing thyrotoxicosis. If that is the reason I think they were rather radical because an old woman of this sort might be carried on iodine the rest of her life and not have to submit to surgical treatment. Pressure may have been a perfectly good indication. Whether one should operate for pressure would depend on the severity of the symptoms and how they were progressing. The fear of malignancy would be another good ground. I fancy they may have operated for pressure.

DR. MALLORY: Dr. Cope, will you explain the indication for operation?

DR. OLIVER COPE: We did operate largely for the pressure symptoms. Dr. Lerman has come more or less to the same diagnosis that I think Dr. Hertz and I did. There is one thing that is not quite fair about the description of the goiter; often the descriptions in the records are somewhat erroneous. The goiter was symmetrical and not nodular. At operation it certainly was bilaterally symmetrical. Perhaps it would be best for me to describe what I found at operation. The goiter was symmetrical and it was not in the least adherent to the surrounding tissues. Except for the color it had the granular uneven lobular appearance of a hyperplastic gland which had been given iodine. The cut surface was similarly granular. On gross appearance it was typical of an iodinized hyperplastic gland except for one important exception, it had not the pinkish color of a true hyperplasia but was very obviously white. The gland contained very little blood and the cut surface exuded a large and unusual amount of lymph and serum. The enlargement was sufficient to have given definite pressure symptoms. We did think of it as a gland that had been previously hyperplastic with hyperthyroidism that had gradually become exhausted. Hypertension and toxicity were not the indications for operation. The indications were mechanical.

PREOPERATIVE DIAGNOSIS

Toxic nodular goiter.

DR. JACOB LERMAN'S DIAGNOSES

Nodular goiter—toxic in the past.
Involution and hyperplasia.
Hypertension.
Arteriosclerosis, cardiac and renal.

PATHOLOGIC DIAGNOSIS

Chronic thyroiditis, Hashimoto's struma.

PATHOLOGIC DISCUSSION

DR. MALLORY: The gross appearance of the resected part of the gland has already been described very well by Dr. Cope, and the microscopic appearance explains its peculiarities. It was a typical Hashimoto's struma, one of these peculiar cases of chronic thyroiditis in which the entire thyroid gland is filled with lymphocytes which are arranged in the form of hyperplastic follicles. In a thyroid lesion of this type perhaps three quarters of the entire gland will be made up of lymph follicles.

The origin of this type of thyroiditis and even its outcome are, I think, still complete mysteries. No single individual has ever seen very many cases and consequently it is difficult to piece together the whole clinical picture. I think this case is a very interesting one in that it presents, as Dr. Lerman has brought out very clearly, so many suggestions of a preceding hyperthyroidism. In the average case of exophthalmic goiter a very considerable amount of lymphoid infiltration is always present and it would seem possible from the histologic point of view to interpret these lesions as an extreme grade of the same type of pathology that one sees in exophthalmic goiter. We were not able to find any hyperplasia in the persisting remnants of thyroid tissue, however, nor have I ever been able to prove persisting hyperplasia in any of the other cases of Hashimoto's struma I have seen.

DR. MEANS: Were there any follicles left?

DR. MALLORY: You mean acini of thyroid tissue? Yes, a moderate number.

DR. MEANS: What kind of cells?

DR. MALLORY: Low cuboidal.

DR. MEAN: With a good deal of colloid?

DR. MALLORY: A fair amount, yes.

DR. MEANS: Hashimoto's form of thyroiditis rarely can be diagnosed clinically. It may present pressure symptoms or myxedema. I remember a case years ago that Dr. Brewster did two operations on that histologically was fairly typical of Hashimoto's struma. We did not know about Hashimoto's work at that time but it was later decided that that was what it was. There was no history of hyperthyroidism prior to the development of myxedema symptoms in that case.

Dr. Mallory has suggested that Hashimoto's struma may be the end result of the lymph-hyperplasia that is a part of the histologic

picture in thyrotoxicosis, that phase of the picture which Dr. Warthin has stressed as being very important. I find it difficult to accept the theory because there has not been any antecedent story suggesting Graves' disease in most of our cases of Hashimoto's struma.

DR. MALLORY: I should agree.

DR. HOLMES: From the histology of these tumors you would expect it to disappear under radiation.

DR. HAMPTON: I had a patient, Dr. Holmes, with such a tumor that was treated by x-ray and it did disappear promptly but it left a fibrous band around the trachea that produced marked dyspnea and cyanosis. I wonder if the trachea was actually inflamed in this case, whether there is a tracheitis with this.

DR. MALLORY: I do not know.

DR. COPE: The interesting thing was that inflammation of the surrounding tissues was conspicuous by its absence.

CASE 21492

PRESENTATION OF CASE

A forty-four year old divorced American woman entered complaining of right lower quadrant pain.

Six months before entry the patient felt a sharp pain in the right lower quadrant just medial to the anterior superior spine. This pain lasted about five minutes and slowly went away leaving a dull nagging ache. Since the onset of this illness she had at least a dozen similar attacks of pain in the same region radiating upward and also down toward the vagina. The attacks of pain increased in length and a physician told her that they were due to a kidney stone. At about this same time she noticed some vaginal bleeding, between her periods, which was very slight but enough to require the wearing of a pad. It occurred several times and did not bear any relation to the menstrual cycle.

Twenty years before entry she had an attack of right lower quadrant pain and was told that she had appendicitis. Operation was advised but she refused. Another similar incident occurred twelve years before entry.

Her family history is non-contributory.

She had been married nineteen years before entry and had separated from her husband eleven years later. Her husband and three children were living and well. Eight months ago she had a thyroid operation.

Physical examination showed a well-developed, obese woman in no acute distress. The heart and lungs were negative. The abdomen was obese. There was slight tenderness in the right lower quadrant. No masses were felt. Pelvic examination showed a lacerated and relaxed perineum. There was a moderate, yellowish-white, vaginal discharge. The cervix was large, boggy, lacerated, eroded and showed a large os with numerous nabothian cysts. The body of the uterus was moderately enlarged, irregular and showed prominence of the right anterior wall. The fundus was moderately retroverted. A rectal examination confirmed the above findings.

The temperature was 98.2°, the pulse 72. The respirations were 18.

Examination of the urine was negative. Examination of the blood showed a white cell count of 6,200 and a hemoglobin of 80 per cent.

On the day following admission operation was performed. The convalescence was uneventful and she was discharged on the sixteenth postoperative day.

DIFFERENTIAL DIAGNOSIS

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"The attacks of pain increased in length and at about the same time she noticed some vaginal bleeding, between her periods, which was very slight but enough to require the wearing of a pad. It occurred several times and did not bear any relation to the menstrual cycle." This is a very significant fact and cannot readily be overlooked, for intermenstrual bleeding cannot be ignored. Some people have a slight pink staining at about the mid interval of the cycle at the time of ovulation due to hyperemia of the endometrium, but the continuous bleeding in this instance seemed to have no relation to the period. Through repeated trauma, either postcoital or douching, bleeding might occur from an endometrial polyp, eroded or cancerous cervix.

Cancer of the fundus or adenoacanthoma of the body of the uterus occurring before the menopause is not uncommon and manifests itself chiefly as bleeding rather than discharge. Usually there is an increased amount of bleeding at the time of the regular periods which are usually not otherwise altered. Menorrhagia is frequently accompanied by a slight blood trickling between the periods. Pain, however, is commonly a late manifestation of the disease.

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Examination of the urine was negative. Examination of the blood showed a white cell count of 6,200 and a hemoglobin of 80 per cent.

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Cancer of the fundus is so frequently regarded as a post-menopausal disease that it is well to consider that it may occur during the normal menstrual life. An attempt to treat such a patient as a functional bleeding problem without a diagnostic curettage may result in disaster. This pitfall is further enhanced by the failure to find much in the way of gross pathology on physical examination. Not enough information is offered in the history to suggest a possible endocrine disorder. Therefore it must be assumed that we are dealing with an organic lesion. Moreover, the majority of symptoms tend to point to the uterus or adnexa as the source of the pathology. Arbitrarily then disease of the urinary tract or appendix has been excluded despite the fact that similar attacks of pain were noted twelve and twenty years ago with operation advised then.

"Eight months ago she had a thyroid operation." Myxedema will produce menorrhagia but we have no information about her periods other than the factor of intermenstrual bleeding.

Pelvic examination showed a lacerated and relaxed perineum consistent with the trauma of repeated childbirth.

There was a moderate yellowish white vaginal discharge appearing from a large, boggy, lacerated and eroded cervix full of numerous nabothian cysts, which is the typical picture of a chronic endocervicitis showing cystic dilatation of the glands on cut section and rarely the site of a carcinoma of the cervix.

"Examination of the urine was negative. Examination of the blood showed a white cell count of 6,200 and a hemoglobin of 80 per cent." Certainly there is little to suggest an acute inflammatory process and we may definitely rule out disease of the appendix or urinary tract.

Let us consider the pelvic findings in view of the history of six months of intermittent right lower quadrant pain gradually increasing in length associated with intermenstrual "spotting".

The presence of nabothian cysts in a chronically infected cervix together with its appearance would seem to rule out cancer of the cervix as a cause of bleeding. The entire description of the feeling of the pelvis would be consistent with pelvic inflammation associated with a fibroid uterus. The uterus is enlarged and irregular as well as retroverted. There is right lower quadrant abdominal tenderness as well as a prominence of the right anterior wall of the uterus consistent with an enlarged hydrosalpinx or tubo-ovarian mass. The pain might readily be explained on a twisting of such a hydrosalpinx. The retroversion of the uterus would be consistent. Pelvic inflammation of long standing later giving rise to symptoms may be present with little in the way of a systemic reaction. Carcinoma of the tube seems unlikely and the character of the discharge is usually watery or bloody in gushes.

A fibroid uterus alone might explain the symptoms. The uterus is enlarged and irregular. The leiomyomata may then be regarded as diffuse. A partial twist of a pedunculated fibroid would explain the pain, while the bleeding may well be due either to a polyp or submucous fibroid. There appears a definite relationship of a fibroid uterus to endometrial hyperplasia which is to be expected if both are considered as the end result of estrin activity.

Though no adnexal tumor can be palpated, a twisted ovarian cyst is a possibility. Torsion which relieved itself would explain the intermittent character of the pain as well as its gradual progression. Slight bleeding accompanies ovarian irritation. Little is noted in the systemic reaction and we must assume that the torsion never was severe enough to interfere with the blood supply.

Diffuse adenomyoma or endometrioma of the uterus would be consistent with the physical examination. More information concerning the amount of bleeding at the time of the period would be helpful. The uterus is diffusely enlarged particularly on the right anterior wall. This may be due to an endometrioma at the cornual junction or may be in the wall itself. The association with fibroids is not uncommon. Frequently a uterus with diffuse endometrioma is mistaken for a fibroid uterus. In most instances some degree of retroversion is present. No suggestion of cysts is found in the broad ligaments. My feeling is that we are dealing with the diffuse nodular type of endometrioma rather than the more common chocolate cyst variety.

Preoperative Diagnosis

Fibroid uterus.

Dr. Langdon Parsons' Diagnoses

Diffuse endometrioma of the uterus.
Torsion in hydrosalpinx?
Carcinoma or adenoacanthoma of the fundus?

Pathologic Diagnoses

Endometriosis of the uterus.
Chronic endocervicitis.
Healed appendix.

Pathologic Discussion

Dr. Tracy B. Mallory: The preoperative diagnosis of the surgeon who operated on this patient was that of multiple fibroids of the uterus. Under ether the vaginal examination confirmed the previous findings. The curettage showed apparently normal endometrium. The cervix was very large and boggy and the vaginal wall was so short that he felt that a complete

hysterectomy from above would be difficult. He, therefore, amputated the cervix from below, then went in above and removed the remainder of it along with the tubes and ovaries. An incidental finding was that the gallbladder contained stones.

Examination of the uterus in the pathology laboratory showed only slight enlargement, but on the posterior surface were some small soft hemispherical projections about one centimeter in diameter. On section these appeared honeycombed with minute cavities. There was, however, no hemorrhage or tarry discoloration. The tubes and ovaries were negative.

Microscopic examination showed the presence of the endometrial type of glands and characteristic endometrial stroma deep in the wall of the uterus and particularly in the localized nodules. Uterine endometriosis of this type is not uncommon and in my experience is much less apt to show the typical tarry appearance that one expects to find in the ovarian lesions or in peritoneal implants. Whether the menstrual reaction and hemorrhage fails to take place in them or whether the hemorrhage occurs but is effectively disposed of is not yet clear. Probably the most important feature in the diagnosis of endometriosis is that the surgeon should constantly bear it in mind as a possibility in any pelvic lesion.

The New England
Journal of Medicine

SUCCESSOR TO
THE BOSTON MEDICAL AND SURGICAL JOURNAL
Established in 1828

Published by THE MASSACHUSETTS MEDICAL SOCIETY under the jurisdiction of the

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SUBSCRIPTION TERMS: *$6.00 per year in advance, postage paid for the United States, Canada $7.04 per year, $8.52 per year for all foreign countries belonging to the Postal Union.*

Material for early publication should be received not later than noon on Saturday. Orders for reprints must be sent to the Journal office, 8 Fenway.

The Journal does not hold itself responsible for statements made by any contributor.

Communications should be addressed to The New England Journal of Medicine, 8 Fenway, Boston, Mass.

PROGRESS IN MEDICINE

IF one raises the question as to the progress of medicine, say in the past hundred years, or in the past thousand years, one is met with a vast array of facts as to cause and course of disease, the structure and the function of the human body, the influence of heredity and environment, the interrelations of the body and the mind. Then too there is the increase in the average length of life, the practical elimination of certain diseases, the justifiable hope that certain other diseases may be caused to disappear from civilized communities. It requires libraries to house the books which tell us of new knowledge and from this point of view the progress has been almost marvelous.

There are other tests of progress, however, and other points of view from which we may regard medicine. Does it rank higher as a profession than formerly? Does the physician realize more fully than ever the high ideals of his art? Is he held in higher honor and regard? Does he deserve to be? Is the physician more than ever a highly respected member of the community? Perhaps to these questions a precise answer cannot be given. The highest ideals of the profession seem to be no higher and no lower than they were at the early times of which we have records. There is the same devotion to the welfare of the patient, the same consecration to the relief of suffering. Also, apparently from early times until now there have been unworthy physicians.

If we ask for some more nearly absolute test of progress we are appalled at the magnitude of the patent medicine business, and the prosperity of those who prey upon human weakness and credulity in matters of health and disease. To the physician it seems that people are more gullible in matters of health than in anything else; and no less gullible now than in the Middle Ages. Today is a day of scientific nomenclature: electrons sell big.

That idea of buying and selling is picturesque. Though often inaccurate and inadequate as used in common parlance, it is sometimes devastating. "The doctor sold himself" is distressingly true, on occasion. But in another slightly different sense is it not true that the doctors have not sold themselves to the people? The profession has not sold itself to the public.

We may reject this crude phrasing of an unpalatable idea. We do not like to think that it is a true indication of the way in which the medical profession is regarded. However, actions speak louder than words and the historian of medicine, weighing carefully what he says and estimating the progress of medicine, declares: "the reader must not forget, however, that only a minority of the sick seek the aid of a physician".[1] Only a minority of the sick seek the aid of a physician! What a challenge to the medical profession!

REFERENCE

1. Henry Sigerist: The Great Doctors. P. 28.

PEDIATRIC PSYCHIATRY

THE practitioner of medicine, and particularly the pediatrician, seems in need of some defence against an idea gaining in prevalence that the pediatrician should be his own psychiatrist. The newer psychology and the possibilities of mental hygiene have been gaining on us by leaps and bounds, and it is time that certain limits be defined before the child's doctor, who has, after all, certain important functions to perform, gets bogged down in a quagmire of behavioristic difficulties.

No one will admit more readily than the psychiatrist, that burly little brother in the medical family, the difficulties of his specialty and the arduous training which a proficiency in it requires. There has been an unfortunate tend-

ency, however, on the part of psychiatry, to criticize pediatrics for failing in those very functions which psychiatry has earmarked for its own and to forget that pediatrics has its own very definite obligations to discharge.

Brennemann a few years ago, in his tolerant way, directed attention to the menace of psychiatry in pediatrics and perhaps at that time fired a shot which is still heard around the psychiatric world, and may be responsible for the animadversions on pediatrics which are occasionally heard today. As a matter of fact, he was not implying that the pediatrician should embrace psychiatry, nor poach upon the preserves of the psychiatrist, but that common sense might at times be less dangerous than a meddlesome psychiatry untempered by this ameliorating influence. Any well-trained psychiatrist will agree with this statement.

The pediatrician who wishes to do his own job well, and who wishes to be left alone to do it, has found an able supporter in Crothers. According to his expressed belief, "The present situation in regard to mental hygiene activities of pediatricians is thoroughly absurd. A great deal of the difficulty is that there is a general assumption that there is a 'whole child' or rather a series of such children for whom the pediatrician is responsible. Every one seems to think, in controversial moments, that the whole child should be supervised by some single expert. In ordinary life no sane person makes any such assumption. The distribution of the control of the child between different persons and the abolition of control by adults for a great share of the time are the routine procedure of all sensible parents.

"The simpler method is to try to find out ways in which one can develop a specific pediatric art of medicine. I think that all pediatricians have accepted the idea of growth and development, and they have also accepted responsibility for the supervision of well children. In addition, they have undertaken to give prompt and adequate service to sick children. Nothing can be safely added to pediatrics which renders the practitioner unavailable for the care of sick children, no matter how desirable the new technic or procedure may be."

The fact is that the organization of an active pediatric practice precludes the possibility of mixing a formal psychiatric practice with it. As Crothers further says, "The meticulous keeping of the time-consuming appointments is one of the difficult things to arrange. For this reason alone the prolonged interviews of the conventional psychoanalytic schools are almost impossible."

A common sense psychology the pediatrician should be able to employ in his daily work, and he should be able to recognize those difficulties for which outside help is needed. Psychiatry, to do its part, must supply a personnel capable of assuming its share of the mutual burden without adding financial ruin to the patient's other disabilities.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

GARFIN, SAMUEL W. D.M.D., M.D. Boston University School of Medicine 1922. Assistant Laryngologist, Collis P. Huntington Memorial Hospital and Beth Israel Hospital. Assistant Surgeon, Aural Service, Boston City Hospital. His subject is "Cancer of the Larynx. A Study of Two Hundred and Two Cases with End Results." Page 1109. Address: 485 Commonwealth Avenue, Boston.

HUDSON, HENRY W., JR. M.D. Harvard University Medical School 1925. F.A.C.S. Associate Surgeon, Children's Hospital, Boston. Assistant in Surgery, Harvard University Medical School. His subject is "Giant Diverticula or Reduplications of the Intestinal Tract. Report of Three Cases." Page 1123. Address: 1101 Beacon Street, Brookline, Mass.

MARBLE, ALEXANDER. A.B., A.M., M.D. Harvard University Medical School 1927. Assistant in Medicine, Harvard University Medical School. Physician, New England Deaconess Hospital, Boston. His subject is "Diabetes Insipidus. Treatment with Posterior Lobe Pituitary Powder Intranasally." Page 1131. Address: 81 Bay State Road, Boston.

WHEATLEY, FRANK EDWARD. A.B., M.D. Tufts College Medical School 1914. Roentgenologist, Goddard Hospital, Brockton, and Milton Hospital, Milton. Director of X-Ray Therapy, Waltham Hospital, Waltham, Mass. Instructor, Harvard Dental School. His subject is "A Deplorable Development in the Economics of Radiation Therapy." Page 1134. Address: 520 Beacon Street, Boston.

PITTS, HERMAN C. M.D. Yale University School of Medicine 1900. F.A.C.S. Surgeon, Gynecological Department, Rhode Island Hospital, Providence. His subject is "Reconstruction of the Vagina from a Portion of the Sigmoid: Report of a Case." Page 1136. Address: 68 Brown Street, Providence, Rhode Island.

STEINER, WALTER R. A.B., L.H.D., M.D. Johns Hopkins Medical School 1898. Consulting Physician at Hartford Hospital, Torrington, Bristol, New Britain, Manchester Memorial,

Meriden and Middlesex (Middletown) Hospitals. His subject is "Dr. William Beaumont." Page 1137. Address: 646 Asylum Avenue, Hartford, Conn.

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POSTPARTUM PULMONARY COMPLICATIONS

The most important pulmonary complications following childbirth are insufflation of gastric contents, pneumonia, embolism, and atelectasis.

Intratracheal insufflation of gastric contents either during labor under hypnotic drugs or more commonly during delivery under anesthesia is a serious complication which may lead to immediate death or provide the cause for pneumonia or lung abscess. Frequently food is consumed before the onset of labor and due to the retarded emptying time of the stomach during labor a large proportion of the gastric contents may be retained. In some hospitals patients are allowed solid or semi-solid food during labor. Therefore, the average obstetric patient differs markedly in her preparation for anesthesia from that of the average surgical case. Obstetrical anesthesia is all too often administered by an inexperienced anesthetist who is unable to cope with the vomiting patient properly.

The medical attendant cannot prevent the patient from taking food at home but he can advise her against this once labor begins and can see to it that she does not have food during labor, especially if he anticipates using analgesic drugs or anesthesia. If the patient has had food shortly before delivery is anticipated and inhalation anesthesia is necessary, gastric lavage is a feasible method of preventing this complication. The writer knows of two deaths on the delivery table from aspiration of gastric contents which have occurred in one large institution during a two-year period. Tracheotomy, inverting the patient, or mechanical intratracheal aspiration was of no avail. On autopsy in each instance, the trachea, bronchi and bronchioles were filled with aspirated gastric material. It is obvious why the various methods of resuscitation failed. In less dramatic instances where smaller amounts of material are aspirated we find the principal causes of various degrees of atelectasis, pneumonia, and occasionally lung abscess. The most effective treatment is prophylactic and consists in preparing the patient for anesthesia in so far as we are able and in securing the most expert administration of anesthetics.

Pneumonia in the puerperium is not a common complication. It may be present or incipient during labor and later be recognized. A fairly large proportion of cases follow operative deliveries with difficult anesthesia. This type especially is likely to show the characteristics of bronchopneumonia but the process may be localized to one or more definite lobes. Symptoms are complicated by the patient's reaction to the delivery and the signs in the early stages are not clear cut. The clinical signs with the aid of portable x-ray are generally adequate for diagnosis. Immediate sputum typing is important. In the Type I group the immediate administration of serum frequently gives excellent results. Otherwise the treatment is supportive with sedation and oxygen therapy as needed.

Pulmonary embolism is the most common cause of sudden death in the parturient and puerperal patient. It occasionally occurs in pregnancy. During or immediately following delivery, embolism is most commonly associated with rheumatic heart disease, difficult vaginal deliveries, vaginal manipulation in placenta praevia, difficult anesthesia and cesarian section. Embolism in this group usually occurs during the delivery or in the first six hours postpartum. All degrees occur from those in which the only clinical evidence is a few localized râles in the chest with slight sudden elevation of pulse and respiration to those in which the patient suddenly becomes cyanotic and expires in a few minutes. The prognosis is in direct proportion to the severity of the case. The mortality in massive puerperal embolism is quoted by various authors at seventy per cent.

Later in the puerperium the chief source of pulmonary embolism is pelvic thrombosis and thrombophlebitis. Many of these patients show no clinical evidence of the thrombosis and the occurrence of embolism is unpredictable. In those instances in which thrombophlebitis is known to exist, our best prophylaxis consists in keeping the patient in bed for at least one week after the temperature and pulse have reached normal levels.

The treatment consists in sedation by morphia and, in the serious group, the use of the oxygen tent. Pulmonary embolectomy is still in the experimental stage and is available in few large institutions. To date it has carried a high mortality.

Postpartum pulmonary atelectasis either of slight or massive variety undoubtedly occurs more frequently than is generally considered. It plays a rôle preliminary to the occurrence of pneumonia in many instances. In the massive variety the extensive involvement of the affected

*A series of short selected articles by members of the Section is being published weekly.
Comments and questions by subscribers are solicited and will be discussed by members of the Section.

lung and the retraction of the heart to the affected side are pathognomonic. If uncomplicated the prognosis in this condition is excellent. From the standpoint of differential diagnosis its recognition is important. The treatment consists of CO^2 inhalations or in turning the patient from side to side several times during the day until reinflation is established.

THIRD ANNUAL POSTGRADUATE MEDICAL EXTENSION COURSE

The following sessions have been arranged by the Committee for the week beginning December 8:

Barnstable

Sunday, December 8, at 4:00 P.M., at the Cape Cod Hospital, Hyannis. Subject: Kidney and Bladder Diseases, B (Surgical): Prostatism and Related Diseases. Cystitis and Pyelitis. Instructor: S. B. Kelley. J. I. B. Vail, Chairman.

Bristol South (Fall River Section)

Monday, December 9, at 4:00 P.M., at the Stevens Clinic of the Union Hospital, Fall River. Subject: Diseases of the Liver: Hepatitis and Painless Jaundice. Problems in Diagnosis and Treatment. Instructors: C. M. Jones and L. S. McKittrick. Eugene A. McCarthy, Sub-Chairman.

Essex North

Friday, December 13, at 4:00 P.M., at the Hotel Bartlett, 95 Main Street, Haverhill. Subject: Pediatrics: The Neonatal State and Its Diseases; Medical and Surgical Aspects. Instructors: L. W. Hill and T. H. Lanman. Francis W. Anthony, Chairman.

Essex South

Tuesday, December 10, at 4:00 P.M., in the Nurses' Home of the Salem Hospital, Salem. Subject: Pediatrics: Abdominal Disease in Childhood; Medical and Surgical Aspects. Instructors: S. H. Clifford and J. W. Chamberlain. Walter G. Phippen, Chairman.

Hampden

Thursday, December 12, at 4:00 P. M., at the Academy of Medicine, Professional Building, 20 Maple Street, Springfield, and at 8:00 P.M., at the Holyoke City Hospital, Holyoke. Subject: Dermatology: Ten Common Skin Diseases — Diagnosis and Treatment. (1) Impetigo Contagiosa, (2) Scabies, (3)Acne Vulgaris, (4) Psoriasis and Seborrhoeic Dermatitis, (5) Epidermophytosis, (6)Herpes Simplex and Zoster, (7) Eczema, (8) Erythema Multiforme, (9) Verruca Vulgaris and (10) Dermatitis Medicamentosa and Dermatitis Venenata. Instructor: E. L. Oliver. George L. Schadt and George D. Henderson, Chairmen.

Hampshire

Wednesday, December 11, at 4:15 P.M., in the Nurses' Home of the Cooley Dickinson Hospital, Northampton. Subject: Kidney and Bladder Diseases, B (Medical): Chronic Nephritis. Cardiorenal Disease. The Use of Diuretics. Instructor: W. R. Ohler. Robert B. Brigham, Chairman.

Middlesex South

Tuesday, December 10, at 4:15 P.M., at the Cambridge Hospital, Cambridge. Subject: Ophthalmology and Otolaryngology: (a) The Major Hazards in Diagnosis of Diseases of the Eye, Ear, Nose and Throat as Seen in General Practice. (b) Special Treatment in Acute Medical and Traumatic Diseases of Eye. Emergencies Arising in the Treatment of the Ear, Nose and Throat. Instructors: P. A. Chandler and C. T. Porter. Edmund H. Robbins, Chairman.

Norfolk South

Monday, December 9, at 8:30 P.M., at the Quincy City Hospital, Quincy. Subject: Kidney and Bladder Diseases, A (Surgical): Hematuria: Its Significance in Surgical Diseases of Kidney and Bladder. Instructor: Richard Chute. David L. Belding, Chairman.

Plymouth

Tuesday, December 10, at 4:00 P.M., at the Brockton Hospital, Brockton. Subject: Review of the Principle of Dietetics. Instructors: W. P. Murphy and John Talbot. W. H. Pulsifer, Chairman.

Worcester North

Friday, December 13, at 4:00 P.M., at the Burbank Hospital, Fitchburg. Subject: Lung Diseases: (a) Significance of Symptoms and Signs in Chronic Lung Disease; Tuberculosis, Bronchiectasis, etc. (b) The Value of Surgery in Above Disease Problems. Instructors: T. L. Badger and R. H. Overholt. Edward A. Adams, Chairman.

BOSTON MEDICAL LIBRARY

HENRY BENCE JONES, M.D., F.R.S. 1813-1873

HENRY BENCE JONES is probably best known to clinicians as the discoverer of a variety of protein, occurring in the urine, which is commonly designated as "Bence-Jones Bodies." This was but one of several important discoveries of a chemical nature which he made, for he may be accounted a pioneer among physicians of the nineteenth century in bringing to bear the results of chemical research upon the clinical aspects of disease. He was born at Thorington Hall, England, on the 31st of December, 1813. When he was twelve he was entered at Harrow where he received a classical training, and at eighteen was matriculated at Trinity

College, Cambridge. From this university he received, in succession, an A.B., in 1836, an A.M. in 1842, an M.B. in 1845 and an M.D. in 1849. He "walked the wards" of St. Georges Hospital as a part of his medical training. During that time he was carrying on special work in chemistry with Thomas Graham at University College. In 1841 he visited Giessen where he continued his chemical studies under Liebig. He became a licentiate in 1842 and a fellow in 1849 of the Royal College of Physicians and subsequently was for several years its senior Censor. In 1846 he was elected to the Royal Society and from 1860 to nearly the end of his life he was secretary of the Royal Institute.

From 1846 until 1860 he was Assistant Surgeon, and later surgeon, to St. Georges Hospital. His celebrity as a physician is indicated by the names of some of the distinguished men of England to whom he ministered in that capacity, viz., Thomas Huxley, Herbert Spencer and Charles Darwin, to mention only three.

In the catalogue of the Royal Society are recorded the titles of thirty-four articles from his pen. That he utilized his chemical researches in a practical way may be inferred from the titles of some of his papers, viz., "Gravel, Calculus and Gout; the Application of Liebig's Physiology to these Diseases." 1842. "On Animal Electricity, An Abstract of the Discoveries of Du-Bois Raymond." 1852. "Animal Chemistry in its Application to Stomach and Renal Diseases." 1850. "Lectures Upon Some of the Applications of Chemistry and Mechanics to Pathology and Therapeutics." 1867. "Croonian Lectures on Matter and Force." 1868. Michael Farraday was a close friend of his and a two volume Life of Farraday, written by Jones, attests the great admiration he entertained for him.

His death took place in London, April 30, 1873. His wife, who was a cousin, and a daughter of the second Earl of Gosford, and a large family survived him.

There are few recorded instances of men who have achieved distinction in the clinical field whose success there seems so definitely grounded upon their own achievements in the realms of pure science. This is the more striking in Jones' case because his practice and research were carried on simultaneously and it was only when compelled by physical warnings of a serious cardiac lesion that he curtailed his clinical work; he was able to continue his scientific studies almost to the end. There is scarcely one of his published communications that does not indicate a desire to correlate scientific truth with diagnostic and therapeutic usage, in a practical way. He enjoyed a large acquaintance among the pure scientists, notably with Latham, Graham, Fownes, Liebig, Tyndal, Huxley, Du-Bois Raymond, Kühne, Brücke, Ludwig, Farraday, Helmholtz and Grove. Among the distinguished practitioners of his day he was not quite so widely recognized. He was honored by membership in numerous scientific and philanthropic societies. His temperament was one that made friends and provoked enmities. His enthusiasm for his work made him a stimulating and inspiring teacher, adored by youth, to whom he was always kindly disposed and helpful, but his intolerance of authority and opposition brought him into conflict with fellow-workers at times, though he was never unwilling to acknowledge that he was in the wrong when it could be demonstrated. The later years of his life were occupied to a considerable extent by his duties as secretary of the Royal Institute where he was the one responsible for selecting outstanding lectures, both in science and literature. He also devoted a good deal of time to devising, while he was a member of a Royal Commission, measures to control a serious epidemic among cattle that had appeared in England in 1865.

It would be difficult to find a better demonstration of the value of a scientific training in physics and chemistry to the practical requirements of a physician than is exemplified in the life of Henry Bence Jones.

REFERENCES

London Lancet **1**: 614 (Apr. 26) 1873.
Medical Times and Gazette **1**: 505, 1873.
Annals of Medical History **2**: 262, 1919.

MISCELLANY

VISITING OFFICIALS OF THE AMERICAN MEDICAL ASSOCIATION

Dr. James S. McLester, President, and Dr. J. Tate Mason, President-Elect of the American Medical Association, made a flying visit to Boston, November 27, as arranged in the program to visit the several constituent medical societies of the National Association.

Dr. Roger I. Lee, a Trustee of the American Medical Association, entertained the visitors at a Somerset Club luncheon, and Dr. Mongan, President, and Dr. Begg, Secretary of the Massachusetts Medical Society, arranged a reception and banquet at the Harvard Club, to which the officers of the State Society, and the District Societies and coördinated medical interests were invited. Both Dr. McLester and Dr. Mason entertained the assembly until a late hour by recitals covering the history of the American Medical Association with full descriptions of all its activities as carried on by the large number of bureaus, heads of departments, and the scientific sections.

These eminent leaders of the profession held the interest of the audience by the clear presentation of facts and the compelling logic of the principles of the national body.

After the address of Dr. McLester, a film was run off which made it possible for the company to visualize the work of each department with reproduc-

tions of photographs of the founders of the Association and many of the present officials.

The most urgent appeal in the addresses was for coördination of the whole medical profession in promoting the best possible care of the illnesses of the people and the maintenance of the sacred functions of the doctor in his relation to his patient.

It was clearly explained that the recent concentration of attention of certain Federal plans on the problems of the medical profession brought us to the brink of a disaster which, although dispelled for the time being, demands of the profession concentration on the plans and purposes of certain government officials, and in order to prevent lay control of medical service there must be developed unanimity of purpose and action by the medical profession.

The speakers made it plain that the House of Delegates intends to carry out the will of the profession, but that there must be shown to this representative body exactly the character of these common sentiments. To that end, each component society must concentrate on the medical problems before the country and send well-informed delegates to the executive body of the Association.

The speakers urged those in attendance to go back to their local societies and instruct the individual members in the important medical problems before the nation.

Dr. Charles E. Mongan, President of the Massachusetts Medical Society, presided and gracefully introduced the speakers.

A FAREWELL DINNER FOR MR. FRANK KIERNAN

On the evening of November 25 the friends of Mr. Frank Kiernan assembled at the Hotel Statler to express their appreciation of the work done by him in Massachusetts for the past ten years, and to wish him success in the new position which he is about to assume as Director of the New York Tuberculosis and Health Association.

Mr. Kiernan came to Massachusetts in 1925 to serve the Massachusetts League as its Executive Secretary. His remarkable energy and interest in public health work led to responsible positions with other organizations as shown by his coincident appointment to the position of Secretary of the Massachusetts Society for Social Hygiene, Secretary and Treasurer of the Massachusetts Central Health Council, and President of the New England Tuberculosis Association. He filled all of these positions with remarkable success, and officers of these organizations responded to introductions by the Reverend Walter F. Greenman who acted as master of ceremonies and paid cordial tribute to the services rendered by Mr. Kiernan. His resignations from these positions were accepted with regret in order to facilitate Mr. Kiernan's promotion to a larger field of usefulness.

The especially appropriate addresses were delivered by Dr. Frederick T. Lord, President of the League; Dr. E. Granville Crabtree, President of the Social Hygiene Society; Dr. Henry D. Chadwick, State Commissioner of Public Health; Dr. Charles F. Wilinsky, Deputy Commissioner of Health of Boston, and Miss Hazel Newton, representing the publicity division of the Boston Council of Social Agencies.

In his response to the felicitations of the several speakers, Mr. Kiernan spoke eloquently of the cordial relations which he has enjoyed with the people of Massachusetts during the past ten years, and assured the company of his continued interest in the public health policies of Massachusetts.

THE REAPPOINTMENT OF DR. DURRETT

Dr. J. J. Durrett of New York has been reappointed Chief of the Drug Division of the Food and Drug Administration. Dr. Durrett will take charge of the work early in January.

Dr. Durrett returns to his former post after an absence of a little more than four years. During that period he was engaged in commercial work and was associated with E. R. Squibb & Sons of New York City. He originally entered the service of the Food and Drug Administration in May, 1928, and resigned in August, 1931.

Before entering the service, Dr. Durrett had fourteen years' experience in the practice of medicine, as a city health officer, and as a surgeon in the Public Health Service. He holds B.S., M.S. and Ph.G. (Graduate in Pharmacy) degrees from the University of Alabama and the M.D. degree from Harvard University.

As Chief of the Drug Division, Dr. Durrett will be in control of the work involved in the enforcement of those provisions of the Federal Food and Drugs Act which apply to drugs, medicines and veterinary preparations.

AN HONOR TO DR. ALICE HAMILTON

A luncheon in honor of Dr. Alice Hamilton was given at the Women's Educational and Industrial Union, November 21, 1935, by the Consumers League of Massachusetts, branch of the National Consumers League, of which she is vice-president.

Dr. Richard Cabot presided and in his address deplored the fact that Harvard had not adequately recognized women leaders in the professions.

Dr. Hamilton is the first woman professor at Harvard University and has been recognized as an outstanding authority in industrial hygiene. She has recently been appointed adviser on industrial poisons for the United States Department of Labor.

RECOGNITION OF THE TEACHING SERVICE OF DR. J. B. AYER

A dinner was given to Dr. James Bourne Ayer on Tuesday, November 26, 1935, at the Tavern Club, Boston, to celebrate the first twenty-five years of his teaching in the Harvard Medical School. About sixty guests attended the dinner, all of whom are members of the Department of Diseases

of the Nervous System, Harvard Medical School, or of the associated departments of neurosurgery, anatomy, physiology, psychology and medicine. Dr. C. Macfie Campbell acted as toastmaster and brief speeches were made by Drs. James H. Means, W. Jason Mixter, George Walton, Merrill Moore, and Henry R. Viets. Amusing skits on the neurology of the past, depicting scenes in the lives of Magendie, Quincke and Gowers, were presented under the direction of Dr. Stanley Cobb and Dr. Tracy J. Putnam. Dr. Ayer spoke briefly in regard to the developments in neurology during the last twenty-five years. In this period of time the department has expanded from one with three or four men to a large group, represented by the following men, who were present at the dinner. A few men active in neurology were unable to attend.

Alexander, Leo	McKenna, John C.
Anthonisen, Niels L.	Means, J. Howard
Ayer, James B.	Merritt, H. Houston
Barrett, Wm. G.	Mixter, Wm. Jason
Bloomberg, Wilfred	Moore, Merrill
Campbell, C. Macfie	Munro, Donald
Caner, G. Colket	Peck, Martin W.
Carmody, J.	Putnam, Tracy J.
Clymer, George	Raeder, Oscar J.
Cobb, Stanley	Richter, C. P.
Cole, Edwin M.	Rioch, David M.
Crone, Neil L.	Schwab, Robert S.
Davis, Hallowell	Smithwick, Reginald
d'Elseaux, Frank B.	Solomon, Harry C.
Emerson, L. Eugene	Stillman, J. Sydney
Epstein, Samuel H.	Thomas, Jackson M.
Faxon, Nathaniel	Tillotson, Kenneth J.
Finesinger, Jacob E.	Trevett, Laurence D.
Fremont-Smith, Frank	Viets, Henry R.
Fremont-Smith, Maurice	Waite, J. Herbert
Golden, Louis	Walton, George
Gregg, Donald	Washburn, Frederic A.
Hodgson, John S.	Waterman, George
Horrax, Gilbert	Wells, F. Lyman
Ingraham, F. D.	White, James C.
Kaufman, M. Ralph	Whitehorn, John C.
Kubik, Charles S.	Whitney, Raymond L.
Lennox, Wm. G.	Wislocki, George
Lunt, Lawrence K.	Wood, W. Franklin
MacDonald, Charles A.	Yakovlev, Paul I.
McDermott, Wm. V.	Young, David A.

TUBERCULOSIS—A CHALLENGE TO YOUTH*

By Louise Strachan
Director Child Health Education, National Tuberculosis Association

"He who has health has hope, and he who has hope has everything," runs an old Arabian proverb.

Hope is characteristic of youth, and health has long been regarded as one of youth's prerogatives. Yet for countless ages tuberculosis has been reaping a rich harvest in the field of youth. That it existed in the days of Egypt's greatness is proved by the evidence found in recently unearthed mummies. Tuthankhamen, whose tomb in the Valley of the Kings was excavated in 1922, and whose age at death was not more than eighteen, appears to have died of tuberculosis. The disease has never been a respecter of persons: prince and pauper, poet and peasant, one and all have suffered its ravages.

Tuberculosis seemed an invincible foe, and indeed it was until the genius of Koch discovered the cause of the disease—a tiny rod-shaped germ known as the tubercle bacillus. This happened but half a century ago, in 1882, and since that time, when a real offensive was launched against this ancient enemy of mankind, the number of lives lost because of tuberculosis has steadily decreased. The tubercle bacillus is on the run! We know more about him today than has ever been known before in the history of the world. We know enough to abolish the disease and the question is not "Can we?" but "Will we?"

Here lies the challenge to youth. The fight cannot be won without the support of the high school and college students, for in their group, between ages fifteen and twenty-four, tuberculosis still triumphs in its old rôle of "Captain of the Men of Death." Most young people possess courage—it is twin to hope—and will face facts. The cold hard fact of the matter is that tuberculosis causes more deaths among young people, between fifteen and twenty-four, than any other disease. What are they going to do about it? If they do nothing, how can the fight be won?

What can they do about it? First, learn the facts: Tuberculosis is preventable. It is curable. It is not hereditary. It is a communicable disease spread only by close contact with a person whose sputum is filled with tubercle bacilli. Secondly, know the weapons with which the disease is being fought: the tuberculin test, a harmless skin test which reveals the presence of infection; the x-ray, which shows the degree of infection and disease; the sanatorium, and the surgical methods of treatment. Also learn the importance of the practice of good daily health habits, which help prevent the disease from developing. There's a reason for adequate rest, well-balanced meals, fresh air, and exercise!

How can this be done? The National Tuberculosis Association and its affiliated associations are hard at work on this problem of youth. The tuberculin testing of high school and college students is spreading rapidly in all sections of the country and the interest and support of high school and college officials in this work is indicative of their recognition of its importance. The first national conference on college hygiene, held at Syracuse University in 1931, laid down specific recommendations for the inauguration and conduct of an adequate tuberculosis program among college students, which includes not only tuberculin testing and x-raying, but also routine instruction in the personal and community aspects of the disease. This conference,

*Published to promote the success of the Seal Sale for 1935.

sponsored by the American Student Health Association and the National Health Council, was initiated by the National Tuberculosis Association, and its Proceedings were published by the same organization. Now, plans are under way for another conference to be held in 1936 to review the recommendations of the Syracuse meeting and strengthen and improve them in the light of five years' experience. The National Tuberculosis Association is closely associated with this undertaking also.

In the high school field much headway is being made. Field trips to local clinics and sanatoria arranged by tuberculosis associations for high school students are being successfully carried on with the whole-hearted support of school authorities. The lively interest shown by the students and the batteries of questions that have been turned upon the leaders of the expeditions prove once again that "youth will face facts" and is eager to know the whys and the wherefores of things. Viewing the tubercle bacillus under a microscope is a thrilling experience and the student who has done so is likely to become a missionary in the cause of spreading the facts about tuberculosis. A friendly talk with the superintendent of the local sanatorium and a visit with him to the x-ray room will familiarize the young adolescent with the weapons used in the fight against this preventable disease and dispel any lurking fears he may be harboring. It is indeed curious how many otherwise intelligent adults still possess an unreasoning fear of tuberculosis. It is, of course, a "hangover" from the old days when a diagnosis of tuberculosis meant tragedy.

Will youth accept this challenge? Will high school and college students lend a hand to speed the fight, win the victory and place tuberculosis in the limbo of ancient and forgotten diseases that have plagued humanity? The campaign is financed by the annual sale of tuberculosis Christmas Seals, a penny each, so everyone may have a share. Buy and use these Christmas Seals. They are messengers of health and hope and happiness; they tell of the courage and faith which has insured the success of the fight thus far. But besides sharing in the purchase of these little stickers, learn the facts about tuberculosis and help your local, state and national tuberculosis associations in their efforts to spread the truth about this preventable, curable, communicable disease.

CORRESPONDENCE

COMPULSORY SICKNESS INSURANCE

November 26, 1935.

Editor, *New England Journal of Medicine,*

Regarding the stand of the State Society against Compulsory Sickness Insurance for low income groups.

The principle of insurance is sound. It is better for the cost of illness to be spread over a lifetime than for it all to come when a person is sick and unable to work.

It is stated that physicians give a hundred million dollars' worth of service to the clinics, free each year. Besides this there is a vast amount of medical service outside the clinics that is never paid for. Why so bitterly oppose a system of insurance that would pay physicians for these services?

Yours very truly,

MILMAN PEASE, M.D.

Brookfield, Mass.

A CORRECTION

Editor, *New England Journal of Medicine,*

In my paper on "Myxedema Heart. Report of a Case" (*New Eng. J. Med.* **213**:918, 1935), an error was made in the interpretation of the published electrocardiogram dated December 5, 1934. Because of the slight irregularity and the marked artifact in Lead I, it was wrongly interpreted as being auricular fibrillation. Because of this, the paragraph in the discussion referring to auricular fibrillation does not apply.

Sincerely yours,

JULIAN C. GANT.

313 Commonwealth Avenue, Boston, Mass.

THE PROBLEM OF CRACKED NIPPLES

November 22, 1935.

Editor, *New England Journal of Medicine,*

Many physicians and nurses and even some obstetricians fail to appreciate the true significance of cracked nipples. Many still adhere to the futile application of mild astringents during pregnancy and to such palliative measures during the puerperium as demulcents, styptics, nipple shields, or the breast pump. They assume the cause to be the innate delicacy of the tissue of the nipples or the unusual vigor of the jaws of the nursing infant.

In my personal experience of more than twenty-five years the actual cause of such fissures of more than transitory duration has invariably been found to be trauma from suckling due to insufficient or deficient lacteal secretion. There has been a concomitant restlessness or excessive crying of the baby with a tendency to lose weight or at least not to gain. Rational therapy obviously should be directed to augmenting the supply of milk with complementary feedings.

Sore nipples therefore should be recognized as a cue to the demand for partial or total weaning of the nursing babe.

Yours truly,

G. W. HAIGH, M.D.

242 Burncoat Street,
Worcester, Mass.

VOMITING OF PREGNANCY

Editor, *New England Journal of Medicine,*

I was much interested in reading the article on "Vomiting of Pregnancy" which appeared in The *New England Journal of Medicine* in a recent issue*.

*213: 885 (Oct. 3) 1935.

It seems to me that he is on the right track and that his ideas concerning its treatment will eventually be accepted.

For the past four years I have been interested in this condition and was led to the same conclusions as regards treatment, but by a different method of approach.

For the last ten years I have been experimenting with auscultation of the abdomen and, in a number of functional and pathological conditions, have noted the presence of exaggerated peristalsis such as nervous indigestion, acute alcoholism, cyclic vomiting of children, and the early vomiting of pregnancy. I am not concerned here with vomiting in the later months of pregnancy.

There is a normal peristaltic rate and an abnormal The normal rate varies from five to ten faint tinkles per minute, the truth of which any physician can satisfy himself if he will listen to the abdomens of thirty or forty healthy young adults. The normal rate seems to be remarkably constant.

When there is some abnormal stimulation of the sympathetic nervous system the peristaltic rate increases. The rate varies from fifteen sounds per minute to a continuous gurgle. The quality of the sounds changes also. The normal high-pitched tinkle is replaced by a harsh low-pitched gurgle. Occasionally the sounds are so loud that it is not necessary to use a stethoscope to hear them.

Occasionally, in cases of acute indigestion, seasickness, and in severe cases of vomiting of pregnancy, spasm is also present and may be so intense as to prohibit peristalsis altogether which temporarily prevents any sounds being heard. In many cases of very acute indigestion the writer has noted this condition, and after the administration of 1/50 of a grain of atropine has noted the presence of active peristalsis. It may prove to be the case that vomiting does not occur until there is a certain amount of spasm. In this condition atropine seems to be more effective than phenobarbital although both are necessary.

During the last four years the writer has collected a series of twenty cases of vomiting in early pregnancy. All but two of them were mild or of moderate severity and all responded quickly to phenobarbital given by mouth. In a few cases where vomiting prohibited its oral administration, sodium luminal was given intramuscularly. In these cases the response to treatment was immediate and surprisingly effective.

About a year ago two severe cases were admitted into the North Country Community Hospital in Glen Cove, Long Island. They entered at nearly the same time. One of them had been able to retain practically nothing in her stomach for a period of three weeks and had lost twenty pounds in weight. The other had been vomiting continuously for about two weeks and had lost fifteen pounds in weight. Both had been under severe mental strain, their husbands being without work. Both had negative physical examinations except for the presence of acetone in the urine and very active peristalsis.

These patients had been in the hospital for several days before I came on service, and had been treated in the usual manner with fluids and glucose which had resulted in very little improvement.

The first day they were given five grains of sodium luminal intramuscularly in divided doses, and three doses of atropine sulphate 1/100 of a grain. The second day they were given four grains of sodium luminal and two doses of atropine. No other treatment was given. In both cases the vomiting ceased within forty-eight hours, and both were able to retain some nourishment on the second day of the treatment. For the next three or four days, phenobarbital (grains ½) was given every four hours. In neither case was there a return of the vomiting. The patients remained in the hospital a few days and in two weeks both had nearly regained their normal weight.

This is only a small series of cases and I am in no position to judge whether the condition of hypermotility and its response to phenobarbital would hold true in a much larger series, but other physicians have told me that they have had success with this treatment.

Very truly yours,

NEIL C. STEVENS, M.D.

Walpole, N. H.

SUPRARENAL CORTEX IN THE TREATMENT OF VOMITING OF PREGNANCY

Editor, *New England Journal of Medicine*,

In the October 31, 1935 issue of The *New England Journal of Medicine*, under the editorial section of Obstetrics and Gynecology, is a treatise on "The Treatment of Vomiting of Pregnancy."

In the discussion of therapy for this condition many types have been included. Nowhere, however, is there any mention of Suprarenal Cortex (Armour's).

This, I believe, is a serious omission because the condition may lead to therapeutic abortion, which is absolutely forbidden in some religions, or may lead to a profound mental shock to those parents who desire children of their own. Therefore, any form of therapy which has already been shown to be of some value, particularly in preventing abortion, is worthy of trial and certainly worthy of being included in a treatise of this sort.

Suprarenal Cortex (Armour's), given either intravenously or orally (the latter after vomiting has subsided), has already proved to be of marked benefit in some cases in our hands. Our preliminary report (by Dr. Joel M. Melick and myself) appeared in the *Journal of Obstetrics and Gynecology*, Volume 29, page 602, April, 1935. Since that time more than fifty cases have been so treated, some being of mild degree, others moderate and still others who would be classed as hyperemesis gravidarum. In the first group there have been three failures and in the latter two groups, in no instances have we had a single failure. The group collected to date is admittedly inadequate for a critical analysis of the results, yet this number is sufficient to bring this therapy out

of the realms of philosophical probabilities. Certainly it should be given a trial when other measures fail. We have had no untoward effects from the suprarenal cortex itself, in any of our cases. I am in hearty accord with the discussion that brings to light the possible complications of avitaminosis and dehydration.

It may be well at this time to stress the fact that we have used only Armour's products in this form of therapy. It is a well-known fact that the strength and the hormone itself changes depending upon the method of extraction. No two manufacturers extract the whole gland exactly alike. It is therefore suggested at the present time that the Armour product be used exclusively until it is fully determined, experimentally, whether other manufacturers' products may be used in the same way.

If I did not fully appreciate the extreme importance of any efficacious therapy in this condition, I would not ask you to bring this matter to the attention of your readers, but fully believing in this, I hope that you will have the kindness to supplement the treatise already printed, with that expressed above.

Sincerely yours,

WILLIAM FREEMAN, M.D.

P. O. Box 489, Worcester, Mass.
November 14, 1935.

OFFICIAL ACTION OF THE BOARD OF REGISTRATION IN MEDICINE

State House, Boston

New England Journal of Medicine,

This is to inform you that at a meeting of the Board of Registration in Medicine held November 15, 1935, the Board voted to revoke the license of Dr. John F. Cummings, of Brockton, for conviction in court on a charge of abortion.

Yours very truly,

STEPHEN RUSHMORE, M.D., *Secretary.*

RECENT DEATHS

SOUTER — WILLIAM NORWOOD SOUTER, M.D., of Portsmouth (New Castle), New Hampshire, died at his home, November 24, 1935, after a long illness.

He was formerly a practitioner in Boston and held positions on the teaching staff of the Harvard Medical School and the Massachusetts Eye and Ear Infirmary.

Dr. Souter was born in Virginia in 1861 and graduated from the University of Maryland School of Medicine and College of Physicians and Surgeons of Baltimore in 1886. His practice had been restricted to ophthalmology.

His widow, Mrs. Mary L. (Benton) Souter; a son, Louis, and a daughter, Helen, survive him.

COY — SETH WILLARD COY, M.D., of 34 Princeton Street, East Boston, died at the Winthrop Hospital, November 28, 1935, the result of being struck by an automobile.

Dr. Coy was born in Boston in 1863 and, after being educated in the public schools of this city, attended the Boston University Medical School and graduated therefrom in 1889. He was a member of the East Boston Medical Society and the Balbec Masonic Lodge.

His widow, Mrs. Grace Coy, and two sons, Ralph Coy and Edward Coy, survive him.

NOTICES

MEDICAL CLINIC AND STAFF ROUNDS AT THE PETER BENT BRIGHAM HOSPITAL

At 3:30 P.M. on Thursday, December 12, in the amphitheater of the Peter Bent Brigham Hospital, Dr. Henry A. Christian, Physician-in-Chief, Hersey Professor of the Theory and Practice of Physic in the Harvard Medical School, will give a medical clinic. To it are cordially invited practitioners and medical students.

On Saturdays in the wards of the Peter Bent Brigham Hospital, from 10 to 12, staff rounds will be conducted by Dr. Christian.

REMOVAL

JOSEPH TARTAKOFF, M.D., announces the removal of his office from 79 Warren Street, Roxbury, to 371 Commonwealth Avenue, Boston. Telephone Commonwealth 4200.

ALPHA OMEGA ALPHA LECTURE

Dr. Warfield T. Longcope, Professor of Medicine, Johns Hopkins University, will deliver a lecture under the auspices of the Harvard Chapter of the Alpha Omega Alpha on "Studies in the Natural History of Bright's Disease". Amphitheatre Building C, Harvard Medical School, Thursday, December 12, at 5 o'clock.

Open to members of the medical profession.

BOSTON DISPENSARY

25 Bennet Street, Boston
Medical Conference Program
9-10 A.M., December 1935

Friday, December 6, Ward Cases—Dr. S. J. Thannhauser.
Saturday, December 7, Obesity — Dr. S. J. Thannhauser.
Monday, December 9, Diabetic Clinic—Dr. J. Schloss.
Tuesday, December 10, Infections of Knee Joints—Dr. John D. Adams.
Wednesday, December 11, Ward Cases — Dr. S. J. Thannhauser.
Thursday, December 12, Experimental and Clinical Observations of Diuretics—Dr. Marshall Fulton.
Friday, December 13, Ward Cases—Dr. S. J. Thannhauser.
Saturday, December 14, Pituitary Diseases and Case Presentation—Dr. S. J. Thannhauser.
Monday, December 16, Social Service Case Presentation—Miss Edith Canterbury.

Tuesday, December 17, Nephritis — Dr. Henry D. Stebbins.

Wednesday, December 18, Ward Cases — Dr. S. J. Thannhauser.

Thursday, December 19, Uric Acid in the Pathogenesis of Gout—Dr. Bernard Jacobson.

Friday, December 20, Ward Cases—Dr. S. J. Thannhauser.

Saturday, December 21, Treatment of Diabetes—Dr. S. J. Thannhauser.

REPORT AND NOTICES OF MEETINGS

THE CAPE COD HEALTH BUREAU ASSOCIATION

At the fall meeting of the Cape Cod Health Bureau Association in Hyannis on November 15, members of the health departments of most of the towns of Barnstable County assembled for a business session and to listen to an address by Dr. Joseph E. Barrett, Assistant Commissioner of the State Department of Mental Diseases. The President, Dr. G. E. T. Ward of Orleans, was in the chair, and the business session included records by the Secretary, Mr. C. R. Bassett of Yarmouth, and a review of health conditions in the county the past six months by Dr. A. P. Goff, County Health Officer.

Dr. Barrett first defined the department which he represented, and then outlined some of the principal phases of its work. It is not, as many suppose, a branch of the Department of Public Health, but is independent, with only one other state department exceeding it in magnitude.

In 1863 there was established the State Board of Charity, which in general cared for health matters, hospitals, penal institutions, etc., and charities. Then there was constituted a Board of Health, Lunacy and Charity; later the Board of Health was separated, and still later Lunacy became Mental Diseases. In 1919 the various boards were legally named "departments". Massachusetts was the first state in the Union to establish a Department of Mental Diseases. The Divisions of the Department include those caring for medicine, mental hygiene, statistics and finance. There are sixteen hospitals maintained by the Department, and in addition there is the prison for the criminal insane at Bridgewater, which, when the new hospital for it at Norfolk shall have been established, will be given over to its care.

Dr. Barrett stated that of the one million hospital beds in the country more than half are for the mentally ill. In Massachusetts, besides the sixteen State institutions, there are two Federal hospitals and twenty-nine licensed private ones. Of the 29,000 known mental patients in the State, 26,000 are in the hospitals, 21,000 insane and 5,000 feeble-minded. The mentally ill number about one in 162 of the population. The cost of the sixteen institutions in 1934 was $9,700,000, or about $6.00 per week per person. Of the State dollar expended, about fifteen cents goes for the mentally ill. In 1934, 6,824 persons were admitted to the hospitals, with the discharges in the same period, about half as many. The death rate is naturally high, for many are physically weak at time of entrance, while there are many elderly individuals. The number of feeble-minded in the State is about 90,000, listed partly through school clinics. So far as the schools are concerned the law requires the town authorities to provide a special school for them if there are as many as ten backward children in a district.

Clinics form a special feature of the program of the Department, and these include out-patient clinics as well as those at the hospitals, and number in all above one hundred. Social workers have the opportunity to discover the feeble-minded, and do good service in this matter. "There are some who think that all such cases should be hospitalized," said Dr. Barrett, "but in fact, all do not need this. Early training may be effective, and many are reclaimed through this means." The general problem had best be attacked from the community side, and the clinics are valuable in this. One evidence of their agency is thought to be in the decreasing readmission rate, the statistics of other states showing in general an increase in this rate.

Following the address the gathering became a round table for the intimate discussion of many questions suggested by the address, which had local interest to the assembled health workers.

NEW ENGLAND DERMATOLOGICAL SOCIETY

The next meeting of the New England Dermatological Society will be held on Wednesday, December 11, 3 P.M., at the Boston City Hospital.

J. HARPER BLAISDELL, M.D., *Secretary.*

THE SOUTH END MEDICAL CLUB

The next regular meeting of the South End Medical Club will be held at the office of the Boston Tuberculosis Association, 554 Columbus Avenue, Boston, on Tuesday, December 17, 1935, at 12 noon. The speaker will be Arthur K. Paine, M.D., F.A.C.S., Surgeon-in-Chief, Boston Dispensary; Consulting Obstetrician, Beth Israel Hospital; Chief of Staff, Evangeline Booth Hospital; Professor at Tufts College Medical School, and Assistant Professor at Harvard Medical School. His subject will be "Progress in Obstetrics". The usual luncheon will be served, and all physicians are cordially invited to attend this meeting.

WILLIAM HARVEY SOCIETY

The next meeting of the William Harvey Society will be held Friday, December 13, in the Auditorium of the Beth Israel Hospital, Boston, at 8:00 P.M.

PROGRAM

Speaker: Dr. Martin H. Dawson, Assistant Professor of Medicine, Columbia University.

Subject: "Rheumatoid and Osteo-Arthritis."

Chairman: Dr. Nathan Sidel, Assistant Professor of Medicine, Tufts College Medical School.

NEW ENGLAND PHYSICAL THERAPY SOCIETY

MEETING AT THE RING SANATORIUM AND HOSPITAL

The New England Physical Therapy Society will meet on Wednesday evening, December 18, as guests of the Ring Sanatorium and Hospital, Arlington Heights.

The address of the evening will be presented by Clifton T. Perkins, M.D., Assistant Superintendent of the Worcester State Hospital. The discussion will be opened by Winfred Overholser, M.D., Commissioner of the Massachusetts Department of Mental Diseases.

A buffet supper will be served at 6:30. The meeting will open at 8.

BOSTON FLOATING HOSPITAL

MONTHLY STAFF MEETING

The next meeting of the Boston Floating Hospital will be held Friday, 12 noon to 1 P.M., December 13, in the Board Room, Boston Floating Hospital.

PROGRAM

Presentation of a Clinical-Pathological Picture of Chronic Nephritis or Essential Hypertension in a Ten-Year-Old Child.

Discussion by Allan Butler, M.D., Children's Hospital, and Soma Weiss, M.D., Boston City Hospital.

ELMER W. BARRON, M.D., *Physician-in-Chief.*

PROGRAM OF THE SPRINGFIELD MEDICAL ASSOCIATION

In connection with the celebration of the three hundredth anniversary of the founding of the city of Springfield, Massachusetts, in or about May 1936, the Springfield Medical Association has arranged a program of meetings which will cover the important matters of medical history of that city.

Three meetings have already been held. At that of September 30, Dr. George L. Schadt presented a paper on "Medical Societies in and about Springfield, 1636-1936". At the meeting on October 28, two papers were presented, one by Dr. Robert A. Kilduffe, on "High Lights in the History of Hospitals," and the other by Dr. Eugene Walker entitled "A Brief History of Springfield's Hospitals". At the meeting of November 25, Dr. Garry de N. Hough read a paper on "Medicine in Springfield, 1636-1850".

The rest of the program follows:

December 16

Medicine in Springfield, 1850-1900 — Dr. Frederick S. Hopkins.

January 27

Medicine in Springfield, 1900-1936—Dr. Laurence D. Chapin.

February 24

Medicine in Massachusetts and New England from Cow Path to State Road—Dr. Reginald Fitz, Boston, Mass.

March 30

The Development of Surgical Practice in Springfield—Dr. John M. Birnie.

April 27

The Development of Non-Surgical Specialties—Dr. Allen S. Johnson.

The Development of Surgical Specialties — Dr. Eugene W. Beauchamp.

May 18

The Development of Medicine in the United States, 1636-1936 — Dr. Henry E. Sigerist, The Johns Hopkins University Institute of the History of Medicine, Baltimore, Maryland.

The membership of the Springfield Medical Association is limited to fifty physicians. It was organized January 29, 1905, and reorganized May 29, 1908. The officers are as follows:

President, George L. Schadt; Vice-President, Garry de N. Hough; Secretary and Treasurer, Daniel R. Wheeler; Executive Committee, F. S. Hopkins, F. H. Baehr, J. P. Derby.

HARVARD MEDICAL SOCIETY

The next meeting of the Harvard Medical Society will be held in the Peter Bent Brigham Hospital Amphitheatre (Shattuck Street Entrance), Tuesday evening, December 10, at 8:15 P.M.

PROGRAM

Presentation of Cases.

Types of Syncope: Their Mechanism and Treatment. By Soma Weiss, M.D.

Medical students and physicians are cordially invited to attend.

MARSHALL N. FULTON, M.D., *Secretary.*

SOCIETY MEETINGS, CONGRESSES AND CONFERENCES

CALENDAR OF BOSTON DISTRICT FOR THE WEEK BEGINNING MONDAY, DECEMBER 9, 1935

Monday, December 9—

*9-10 A.M. Boston Dispensary, 25 Bennet Street, Boston. Diabetic Clinic. Dr. J. Schloss.

Tuesday, December 10—

*9-10 A.M. Boston Dispensary, 25 Bennet Street, Boston. Infections of Knee Joints. Dr. John D. Adams.

2:30 P.M. Pediatric Ward Visit. Massachusetts Eye and Ear Infirmary.

7:45 P.M. Gardner Auditorium, State House, Boston. Current Ethical Trends. James J. Walsh, M.D.

*8:15 P.M. Harvard Medical Society. Peter Bent Brigham Hospital Amphitheatre (Shattuck Street Entrance).

Wednesday, December 11—

*9-10 A.M. Boston Dispensary, 25 Bennet Street, Boston. Ward Cases. Dr. S. J. Thannhauser.

†12 M. Clinico-Pathological Conference. Children's Hospital.

3 P.M. New England Dermatological Society. Boston City Hospital.

Thursday, December 12—

*8:30-9:30 A.M. Clinic, Surgical Staff of the Peter Bent Brigham Hospital, at the Peter Bent Brigham Hospital.

*9-10 A.M. Boston Dispensary, 25 Bennet Street, Boston. Experimental and Clinical Observations of Diuretics. Dr. Marshall Fulton.

*3:30 P.M. Medical Clinic at the Peter Bent Brigham Hospital.

*5 P.M. Alpha Omega Alpha Lecture. Harvard Medical School, Amphitheatre Building C.

Friday, December 13—

*9-10 A.M. Boston Dispensary, 25 Bennet Street, Boston. Ward Cases. Dr. S. J. Thannhauser.

8 P.M. William Harvey Society. Beth Israel Hospital Auditorium, Boston.

12 Noon. Boston Floating Hospital, Monthly Staff Meeting.

Saturday, December 14—

*9-10 A.M. Boston Dispensary, 25 Bennet Street, Boston. Pituitary Diseases and Case Presentation. Dr. S. J. Thannhauser.

*10-12. Staff rounds at the Peter Bent Brigham Hospital.

*Open to the medical profession.
†Open to Fellows of the Massachusetts Medical Society.

December 5—Faulkner Hospital Clinical Meeting, 5 P.M.

December 5-7—National Society for the Prevention of Blindness. See page 940, issue of November 7.

December 6-21—Boston Dispensary, Medical Conference Program. See page 1155.

December 10—Harvard Medical Society. See page 1157.

December 11—New England Dermatological Society. See page 1156.

December 12—Alpha Omega Alpha Lecture. See page 1155.

December 12—Medical Clinic at the Peter Bent Brigham Hospital. See page 1155.

December 13—William Harvey Society. See page 1156.

December 13—Boston Floating Hospital. See page 1157.

December 16 - May 18—Program of the Springfield Medical Association. See page 1157.

December 17—The South End Medical Club. See page 1156.

December 18—New England Physical Therapy Society. See page 1157.

DISTRICT MEDICAL SOCIETIES

ESSEX SOUTH DISTRICT MEDICAL SOCIETY

January 8—Wednesday. Danvers State Hospital, Hathorne. Clinic 5 P.M. Dinner 7 P.M. Speaker: Dr. Hoskins. Subject: To be announced later.

February 5—Council Meeting, Boston.

February 12—Wednesday. Addison Gilbert Hospital, Gloucester. Clinic 5 P.M. Dinner 7 P.M. Speaker and subject to be announced later.

March 4—Wednesday. Lynn Hospital. Clinic 5 P.M. Dinner 7 P.M. Speaker: Dr. Timothy Leary. Subject: Arteriosclerosis.

April 1—Wednesday. Essex Sanatorium, Middleton. Clinic 5 P.M Dinner 7 P.M. Speaker: Dr. Richard H. Overholt of the Lahey Clinic. Subject: Chest Surgery.

May 7—Thursday. Censors' Meeting.

May 13—Wednesday. Annual Meeting. Salem Country Club. Dinner at 7 P.M. Speaker: Dr. Paul White. Subject to be announced later.

R. E. STONE, M.D., Secretary.

FRANKLIN DISTRICT MEDICAL SOCIETY

Meetings are held on the second Tuesday of January, March and May at the Weldon Hotel, Greenfield, at 11 A.M.

CHARLES MOLINE, M.D., Secretary.

NORFOLK DISTRICT MEDICAL SOCIETY

January 28, 1936—Hotel Kenmore at 8 P.M. Subject: "Compulsory Sickness Insurance." Speakers to be announced.

February 25, 1936—Massachusetts Memorial Hospitals at 8 P.M. Papers by the staff.

March 31, 1936—Hotel Kenmore, at 8 P.M. Dr. Benedict F. Boland—"Cauterization of the Cervix Uteri Using Various Electrical Methods." Illustrated with lantern slides.

May, 1936—Annual Meeting. (Place, date and subject to be announced.)

The censors meet for the examination of candidates: May 7, 1936; November 5, 1936.

FRANK S. CRUICKSHANK, M.D., Secretary.
1236 Beacon Street, Brookline, Massachusetts.

PLYMOUTH DISTRICT MEDICAL SOCIETY

January 16—Goddard Hospital. Subject and speakers to be announced later.

March 19—Plymouth County Sanatorium, South Hanson.

April 16—Brockton Hospital.

May 21—Lakeville State Sanatorium.

G. A. MOORE, M.D., Secretary.

SUFFOLK DISTRICT MEDICAL SOCIETY

December 11—At 8:15 P.M. Joint Meeting with the New England Heart Association at the Boston Medical Library. "Constrictive Disease of the Pericardium," Dr. Charles Sidney Burwell. Discussion: Dr. Edward D. Churchill, Dr. Paul D. White and Dr. Rolf Lium.

January 29, 1936—Joint Meeting with the Boston Medical Library at 8 Fenway. "Observations Around the World," Dr. Walter B. Cannon.

March 18, 1936—Meeting at the Boston Medical Library. "The Laboratory and Clinical Story of Fatigue," Dr. Arlie V. Bock and Dr. David B. Dill. Discussion: Dr. Donald J. MacPherson and Dr. Augustus Thorndike, Jr.

April 29, 1936—Annual Meeting at the Boston Medical Library. "The Treatment of Septicaemia," Dr. Champ Lyons. "The Pleurality of Scarlatinal Streptococcus Toxin," Dr. Sanford B. Hooker. Discussion: Dr. Hans Zinsser.

The medical profession is cordially invited to attend all of these meetings.

ROBERT L. DeNORMANDIE, M.D., President,
CHARLES C. LUND, M.D., Secretary,
FRANCIS T. HUNTER, M.D.,
Boston Medical Library.

WORCESTER DISTRICT MEDICAL SOCIETY

December 11—Wednesday evening. St. Vincent Hospital, Worcester, Mass. Dinner at 6:15. Scientific Program at 7:30. "Genital Prolapse," Dr. John M. Fallon. "Acute Appendicitis Still a Medical Problem," Dr. J. J. Dumphy. "Surgical Diseases of the Biliary Tract. Its Management from Viewpoint of Physician and Surgeon," Dr. J. C. McCann.

January 8, 1936—Wednesday evening. Worcester City Hospital, Worcester, Mass. Dinner and scientific program. Subjects of program to be announced later.

February 12. 1936—Wednesday evening. Worcester State Hospital, Worcester, Mass. Dinner and scientific program. Subjects of program to be announced later.

March 11, 1936—Wednesday evening. Memorial Hospital, Worcester, Mass. Dinner and scientific program. Subjects of program to be announced later.

April 8, 1936—Wednesday evening. Hahnemann Hospital, Worcester, Mass. Dinner and scientific program. Subjects of program to be announced later.

May 13, 1936—Wednesday afternoon and evening. Annual Meeting of Society. Time, place and details of program to be announced in an April issue of the Journal.

ERWIN C. MILLER, M.D., Secretary.

BOOK REVIEW

Free Medical Care (Socialized Medicine). E. C. Buehler. 360 pp. New York: Noble & Noble, Publishers, Inc. $2.00.

This book is the second of this author's series of books edited for the purpose of furnishing material for debaters.

In the first part it summarizes conditions as they are in regard to medical service and presents some of the problems which exist. This is done in a clear and fair manner.

There then follows a splendid bibliography of the articles on this subject that have been published from 1929 to the Spring of 1935.

The second half of the book consists in a reproduction of an appreciable number of leading articles mentioned in the bibliography. These articles include those in favor of and those opposed to socialized medicine.

Finally it gives a summary of the various experiments already being tried out in various parts of this country along these lines.

At the end the recommendations of the majority and the minority on the Committee on the Costs of Medical Care are added and the recent votes of the American Medical Association, American College of Surgeons and the American Dental Association on these problems.

It is an excellent reference book to any one wishing to become familiar with the various points of view on this complicated subject. The author does not add any personal opinions.